



Point Curvature: Large
Aspect Ratio: Small ($\div 1$)

FIG. 1A PRIOR ART



Point Curvature: Little Small
Aspect Ratio: Small ($\div 4.5$)

FIG. 1B PRIOR ART



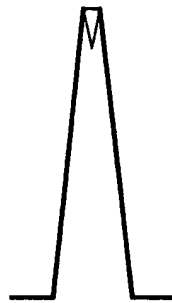
Point Curvature: Little Small
Aspect Ratio: Small ($\div 1$)

FIG. 1C PRIOR ART



Point Curvature: Small (Several nm)
Aspect Ratio: Large ($\div 10$)

FIG. 1D PRESENT INVENTION



Point Curvature: Small (Several nm)
Aspect Ratio: Large ($\div 10$)

FIG. 1E PRESENT INVENTION

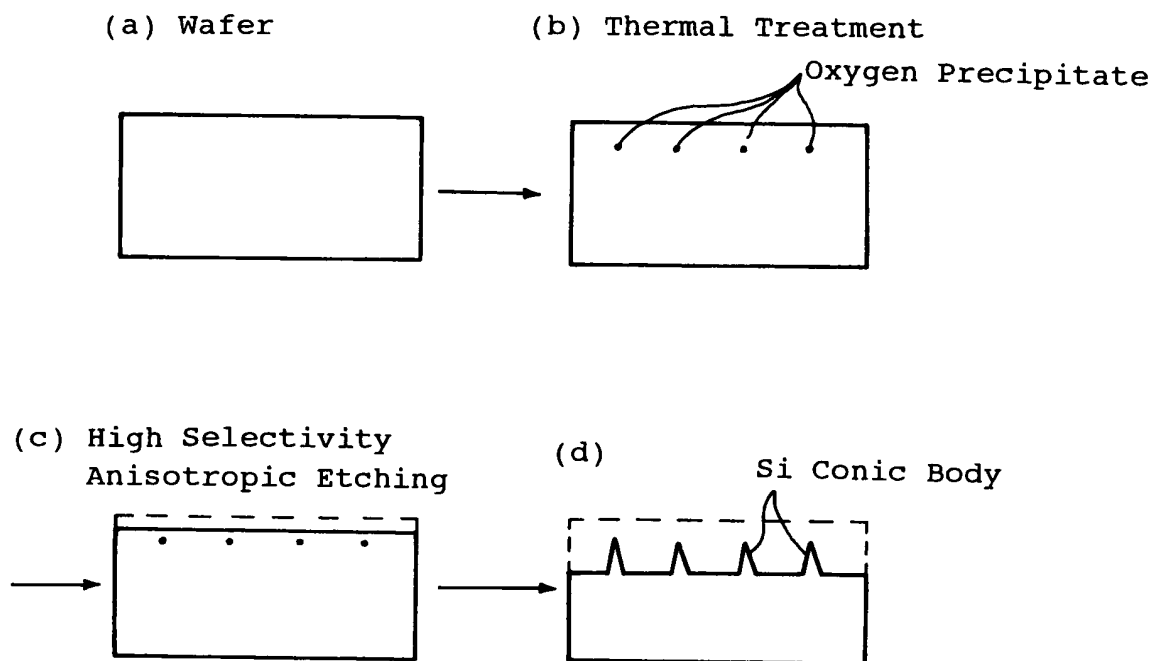
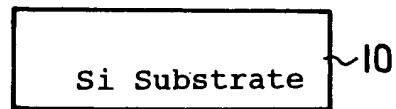
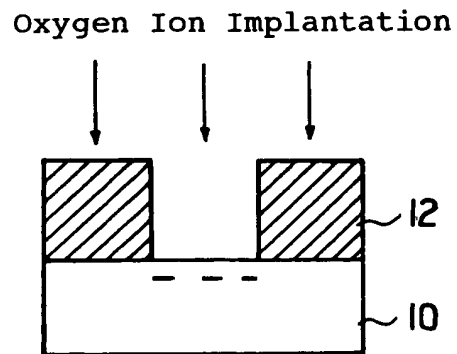
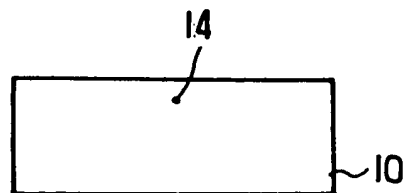
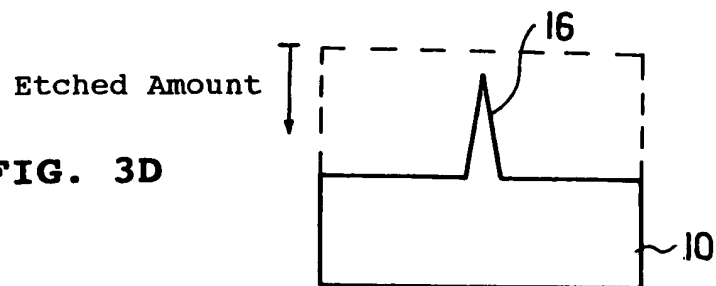
**FIG. 2**

FIG. 3A**FIG. 3B****FIG. 3C****FIG. 3D**

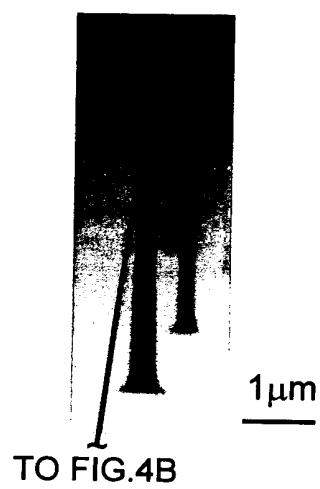


FIG.4A

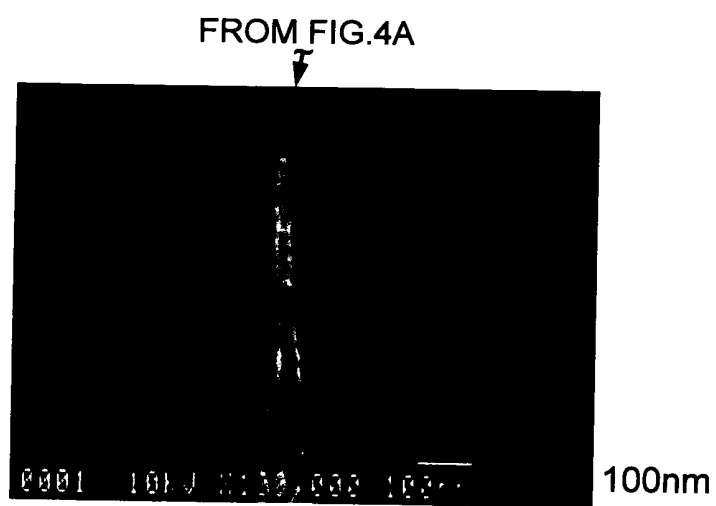
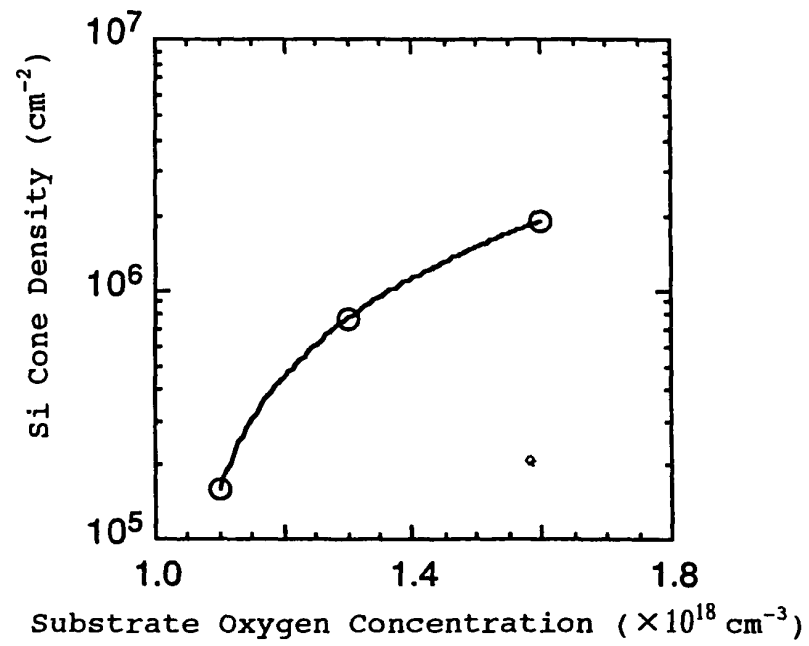


FIG.4B

**FIG. 5**

B Implantation Amount:

$$7 \times 10^{13} \text{cm}^{-2}$$



100μm

FIG.6A

B Implantation Amount:

$$1 \times 10^{14} \text{cm}^{-2}$$



100μm

Black dots
are silicon needle conic bodies.

FIG.6B

FIG. 7A

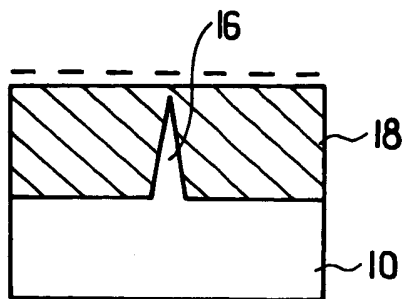


FIG. 7B

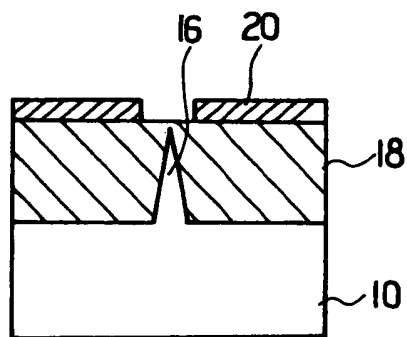
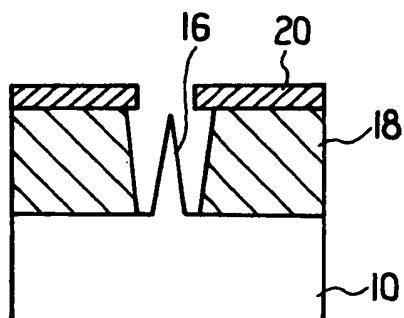


FIG. 7C



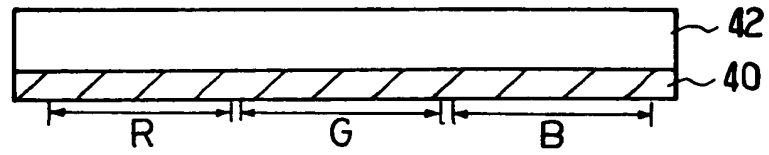


FIG. 8A

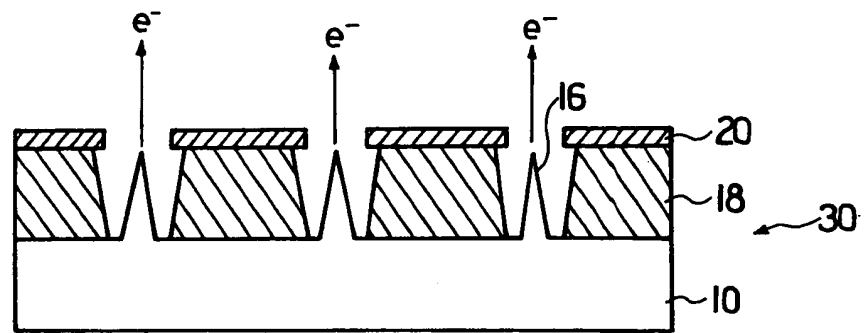
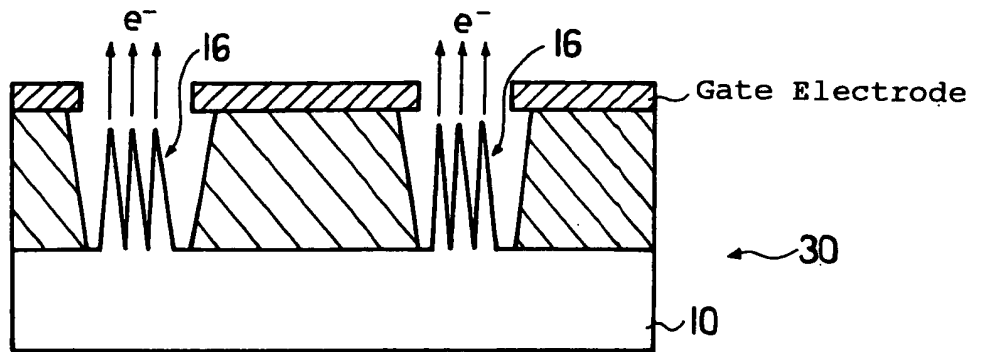


FIG. 8B



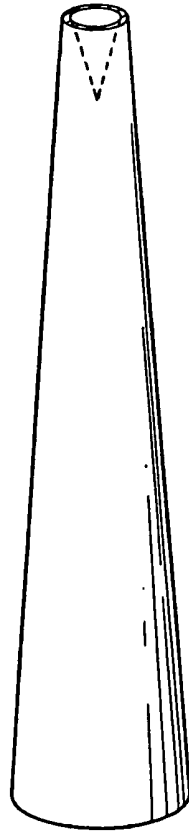


FIG. 9A

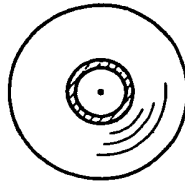
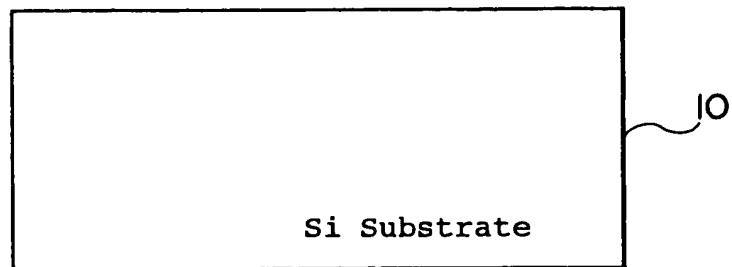


FIG. 9B

FIG. 10A

Oxygen Ion Implantation

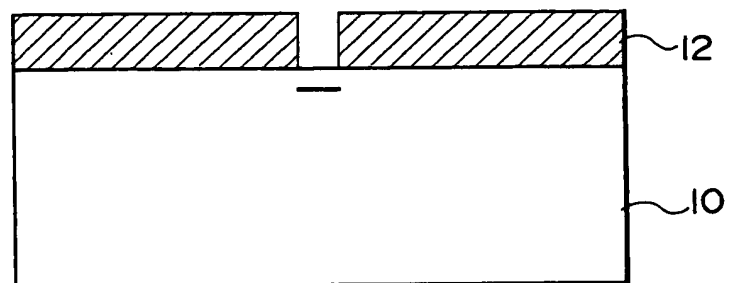
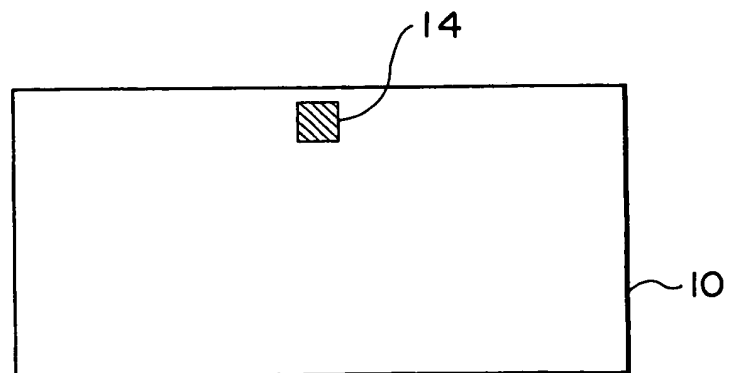
**FIG. 10B****FIG. 10C**

FIG. 10D

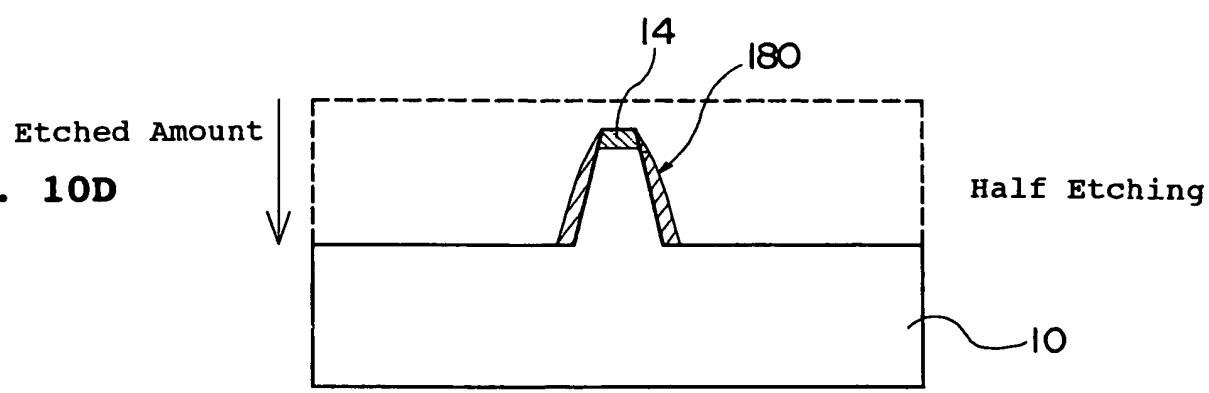


FIG. 10E

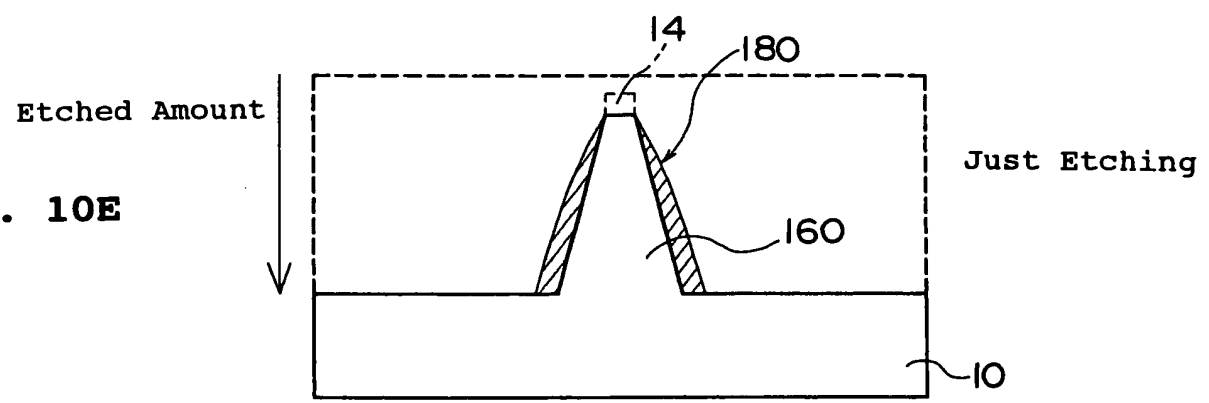
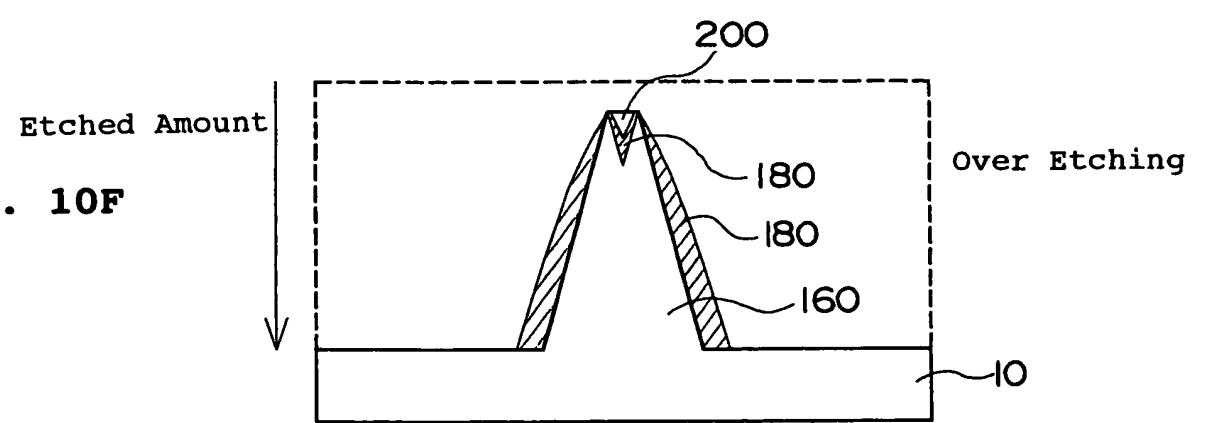


FIG. 10F



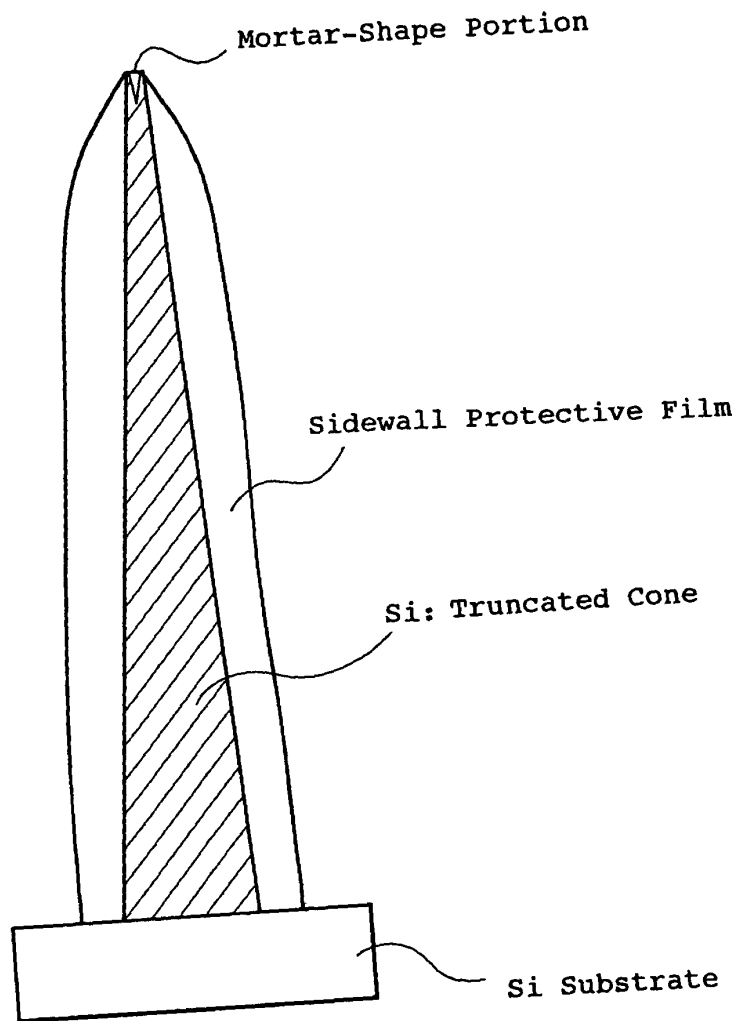


FIG. 11

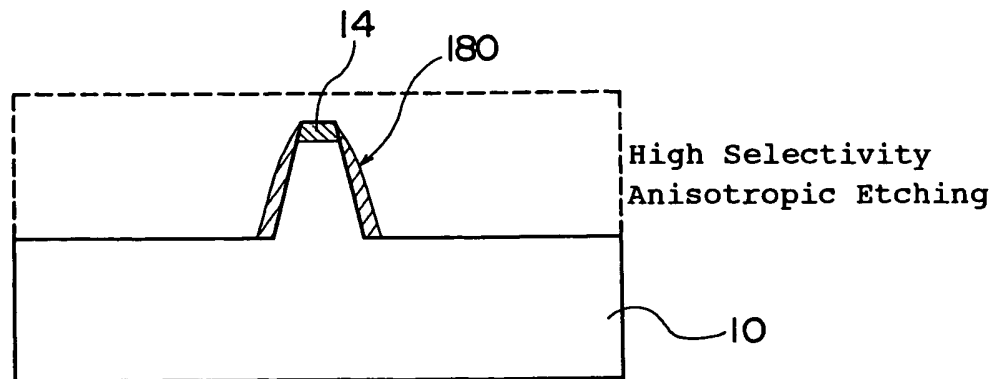
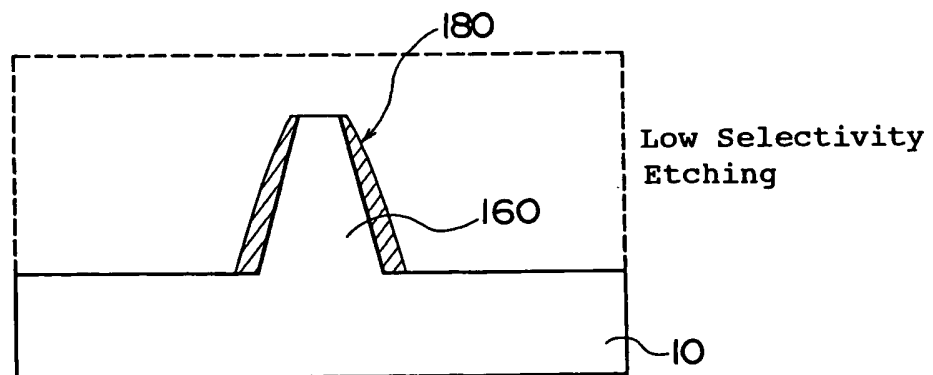
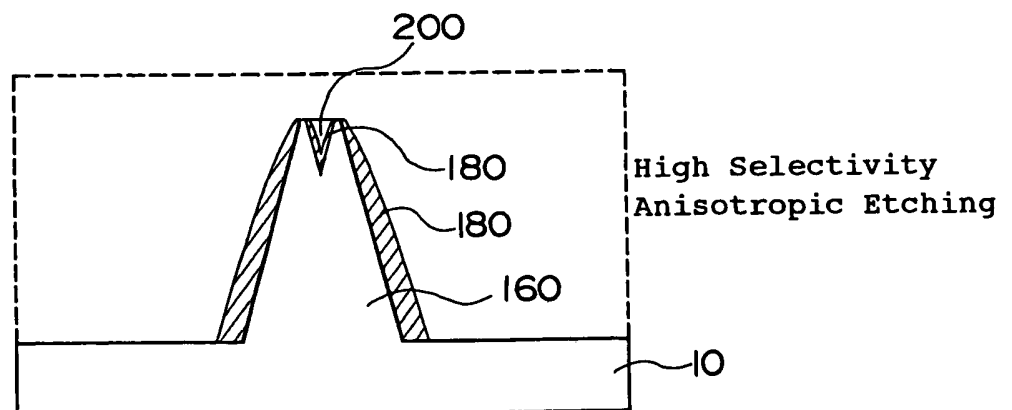
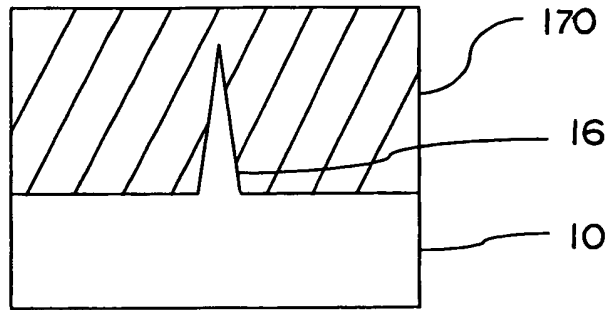
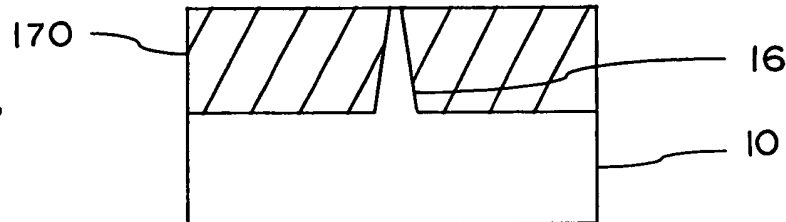
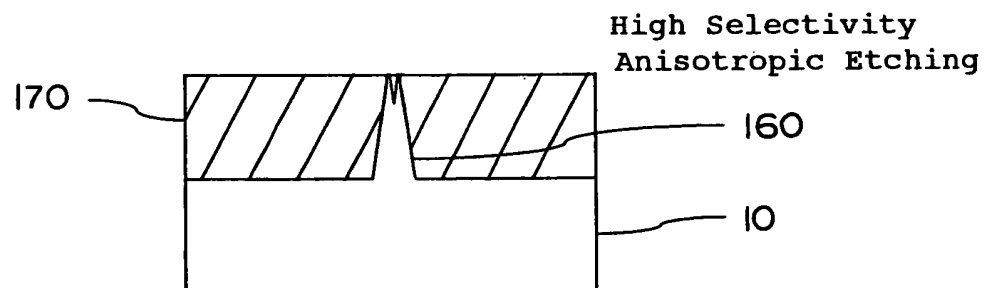
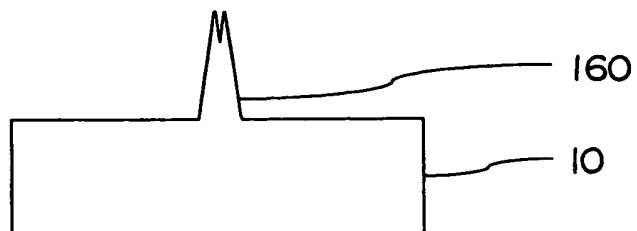
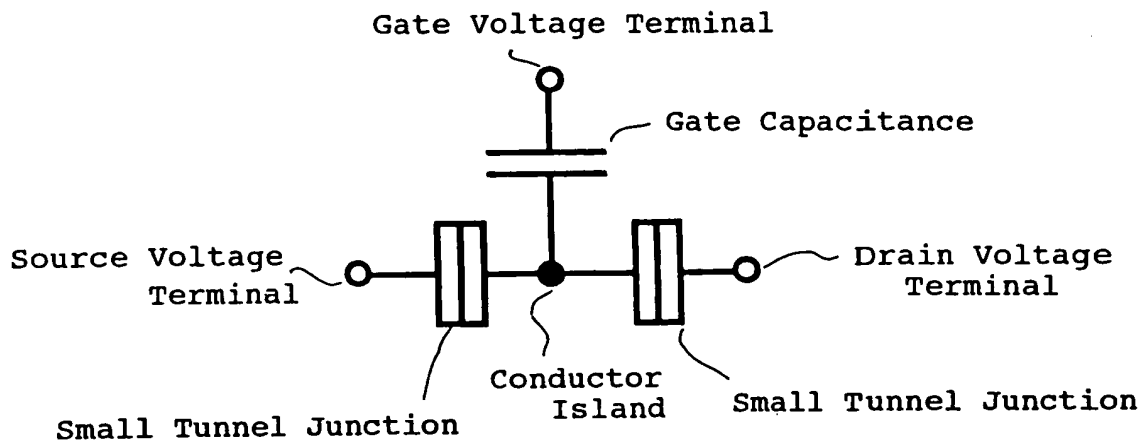
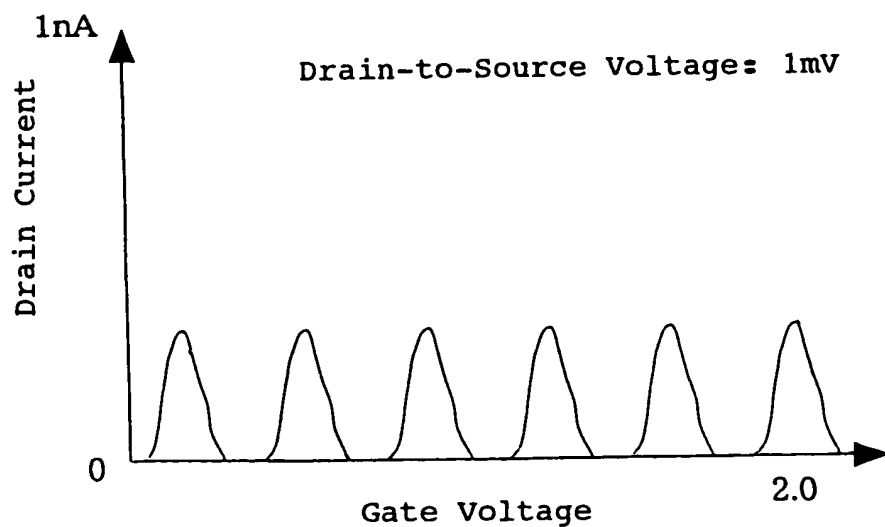
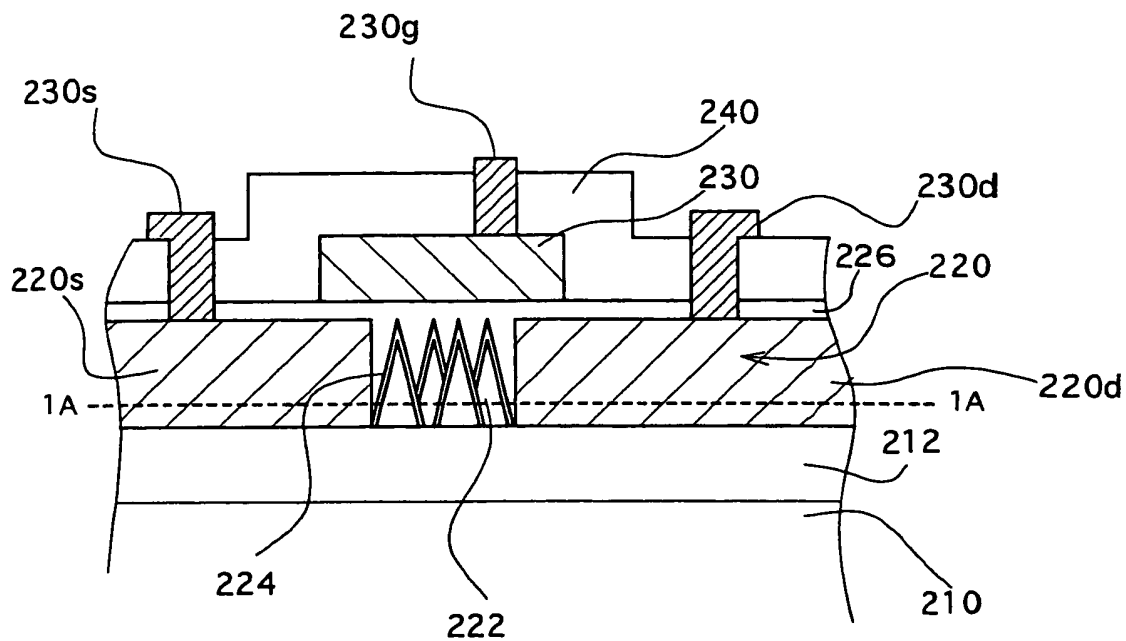
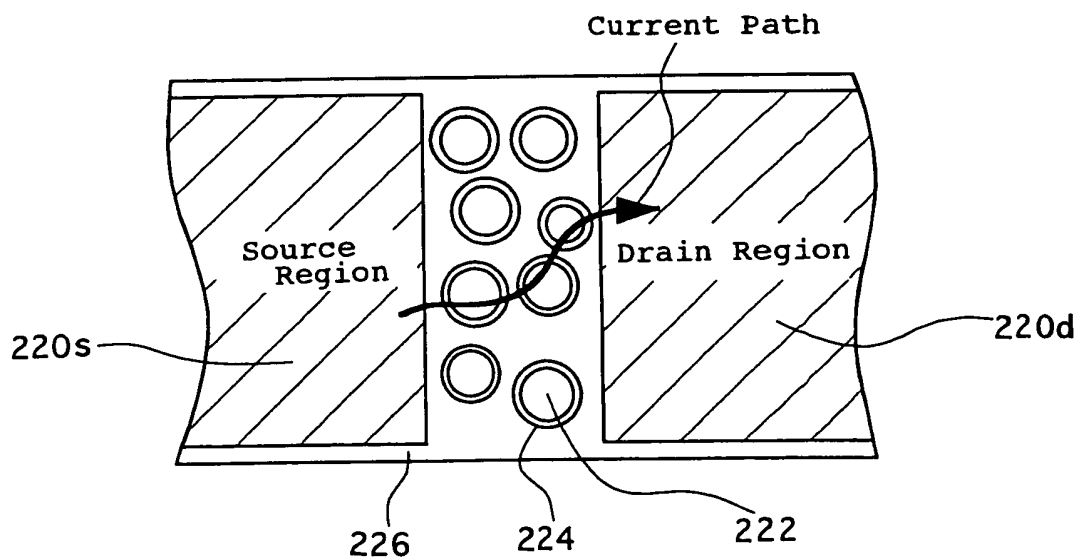
FIG. 12A**FIG. 12B****FIG. 12C**

FIG. 13A

CMP or Etch Back

FIG. 13B**FIG. 13C****FIG. 13D**

**FIG. 14A PRIOR ART****FIG. 14B PRIOR ART**

**FIG. 15A****FIG. 15B**

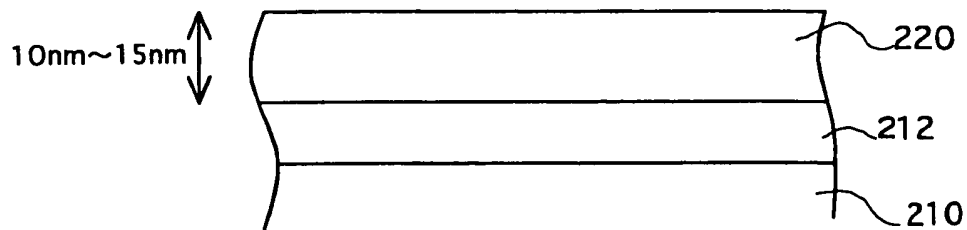


FIG. 16A

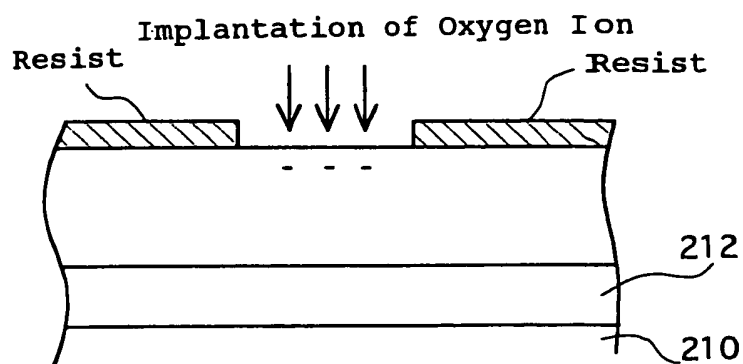


FIG. 16B

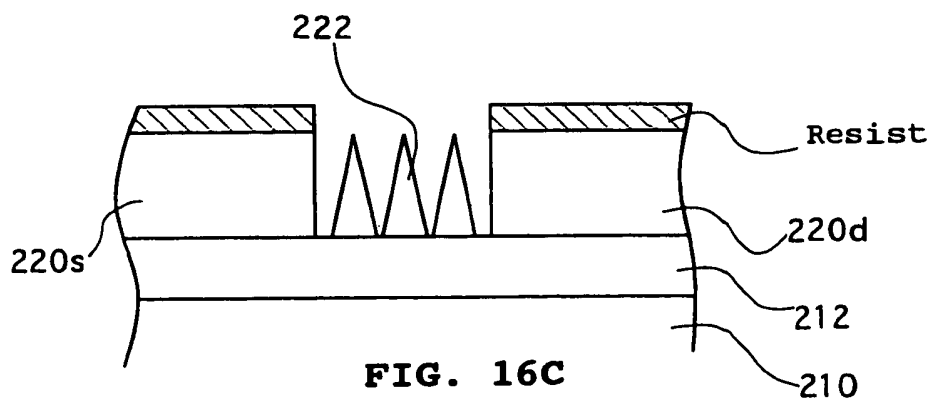


FIG. 16C

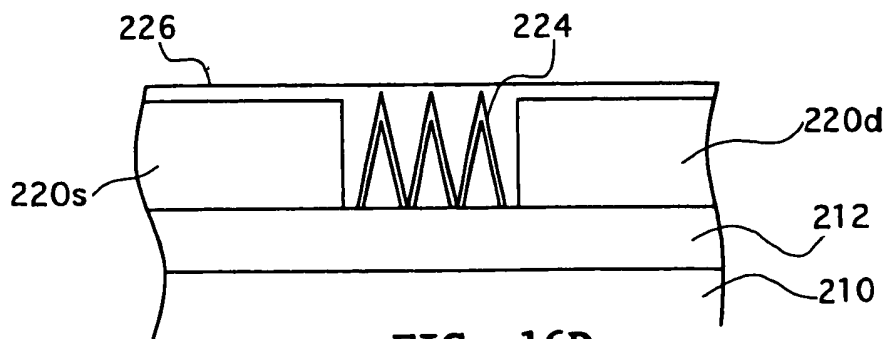


FIG. 16D

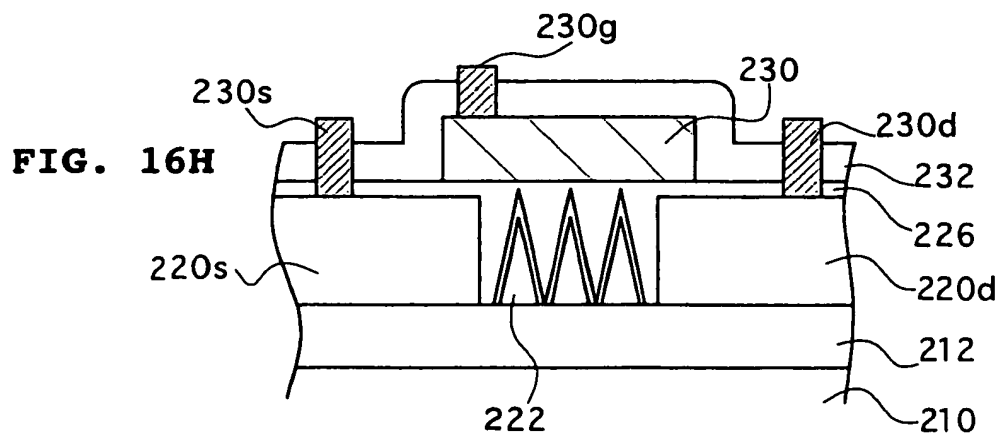
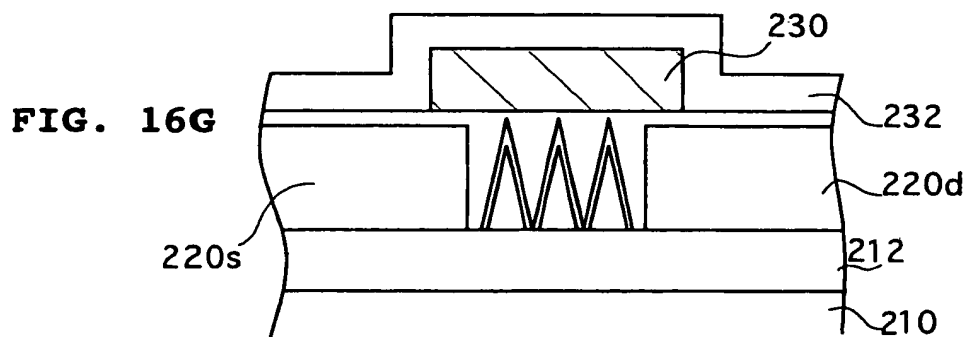
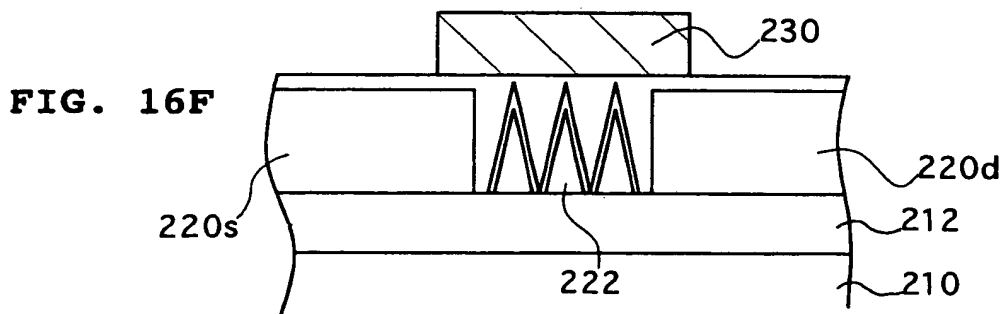
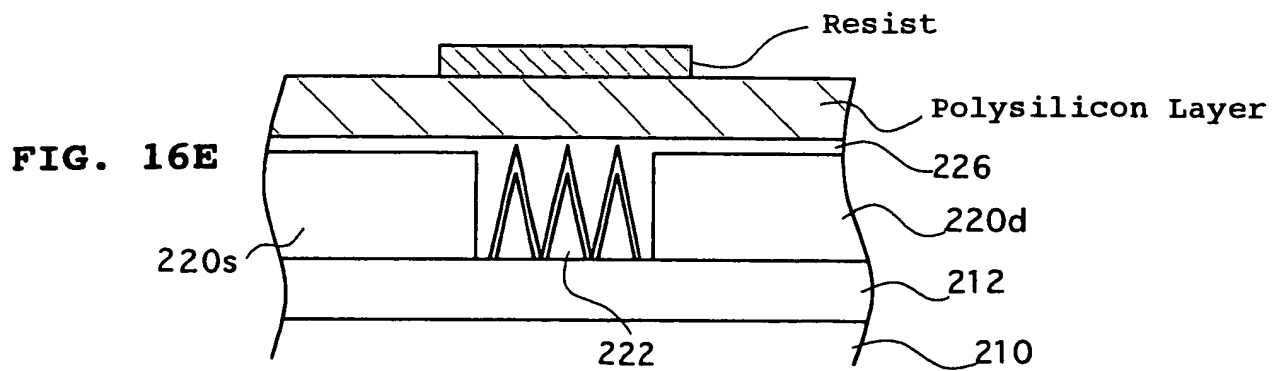
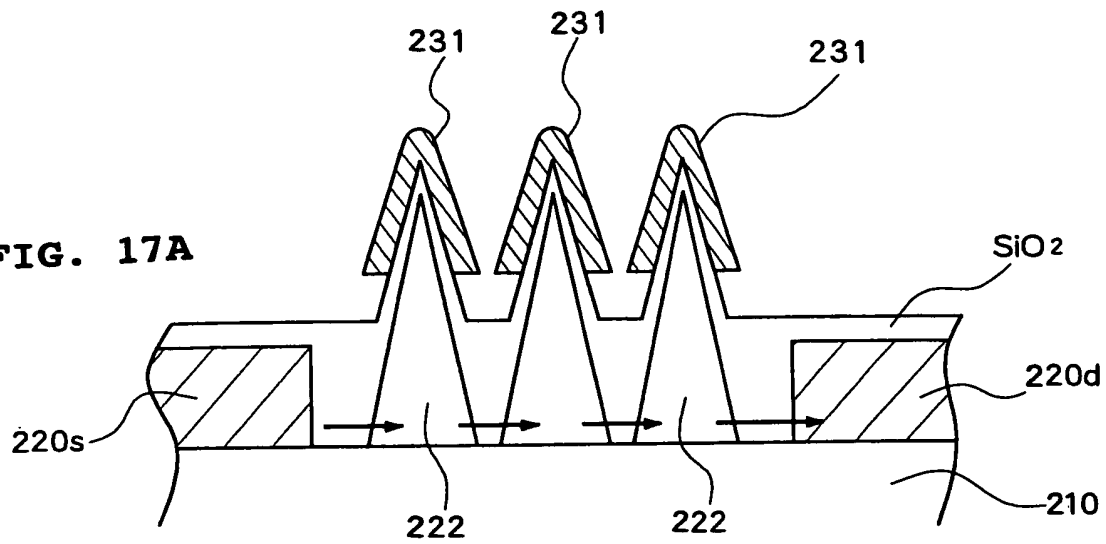


FIG. 17A



Selective Gate Control

FIG. 17B

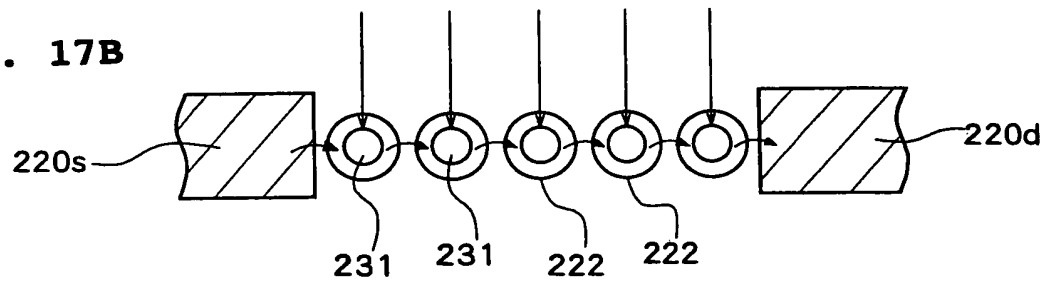
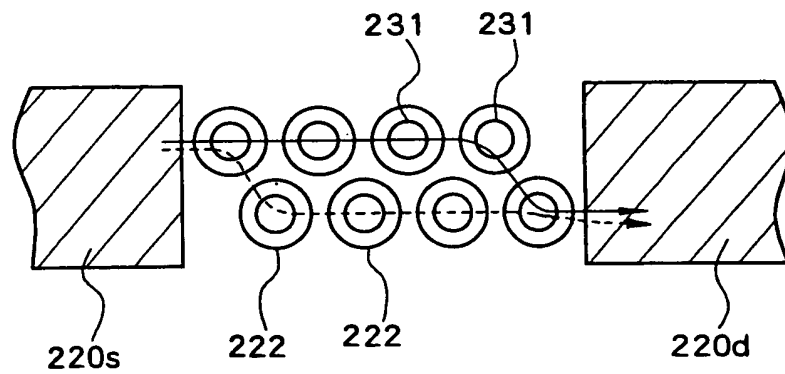


FIG. 17C



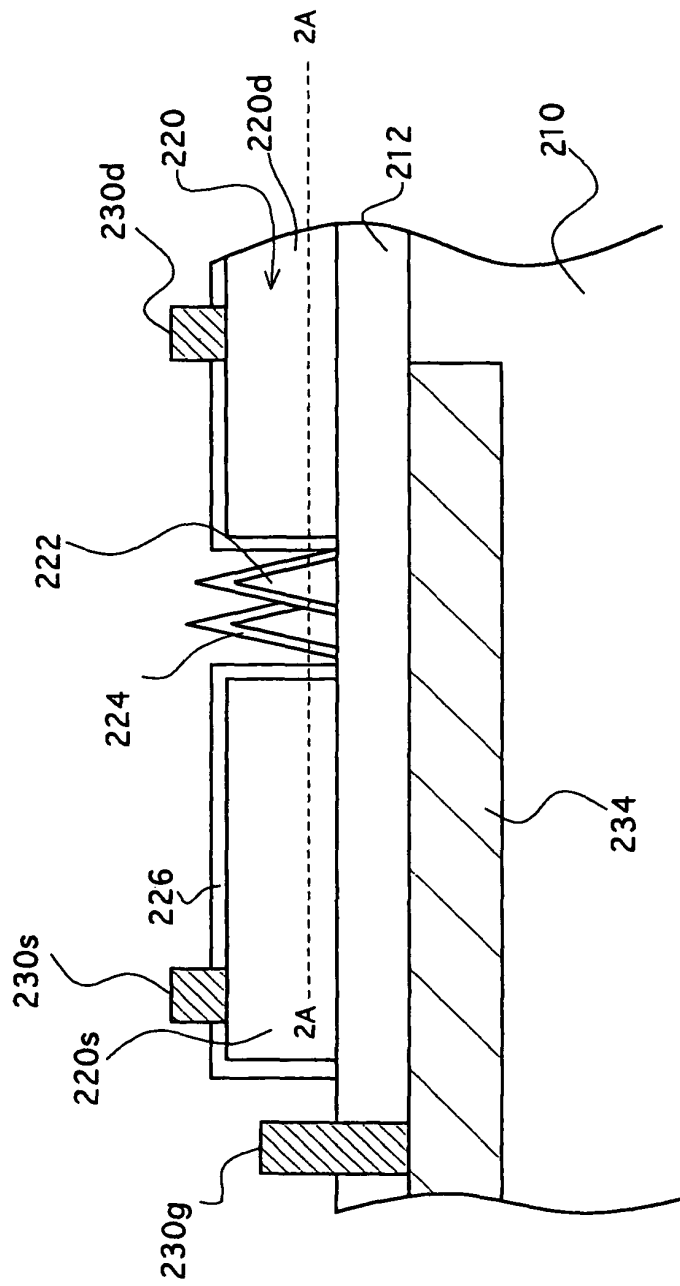


FIG. 18

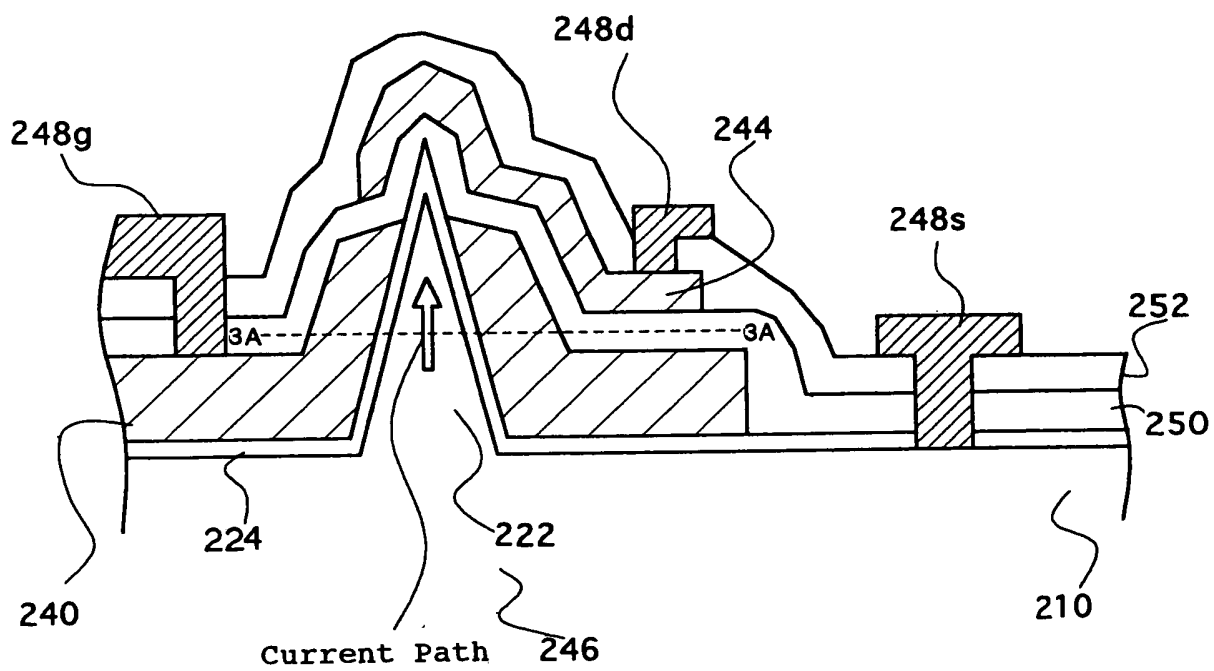


FIG. 19A

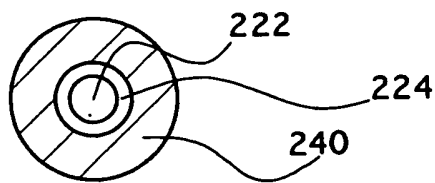


FIG. 19B

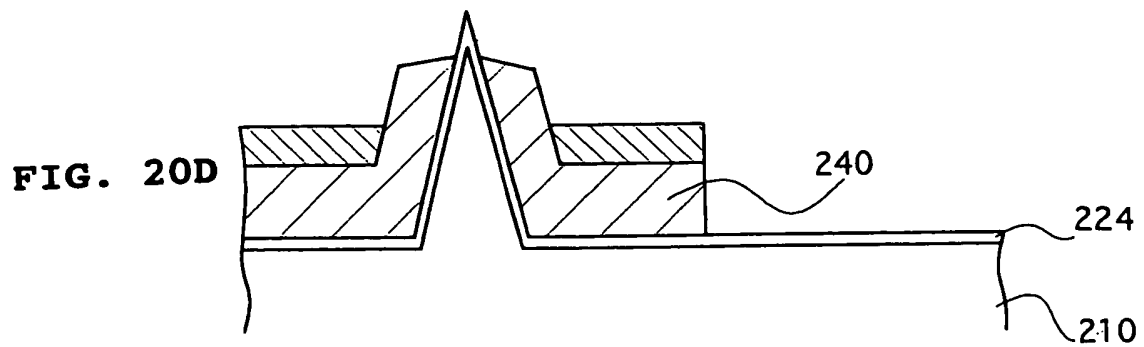
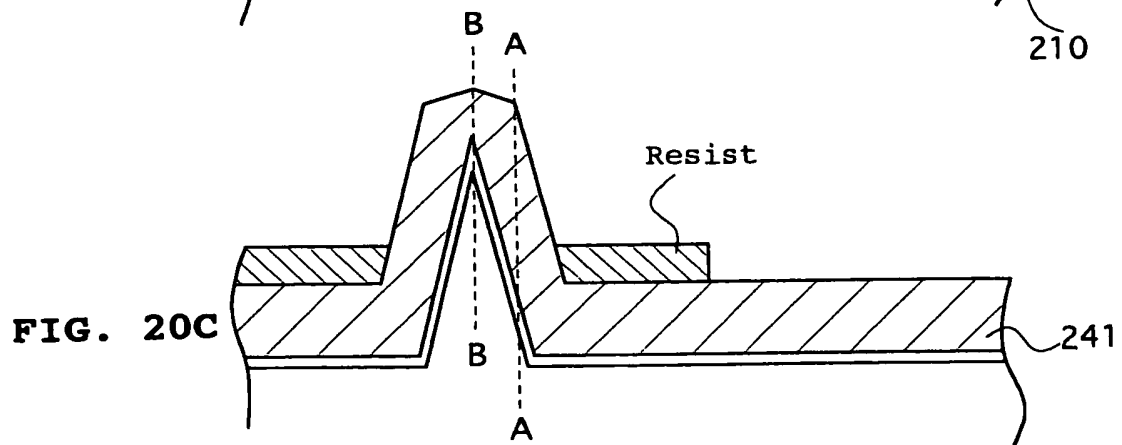
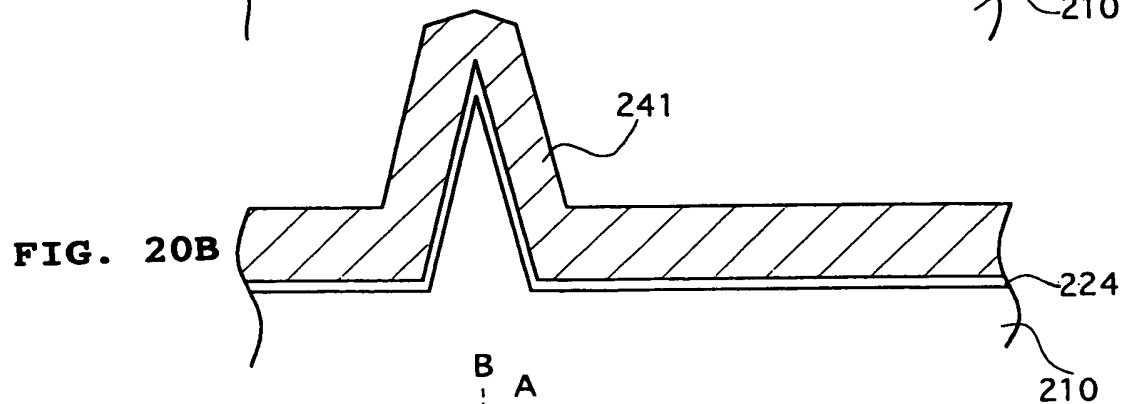
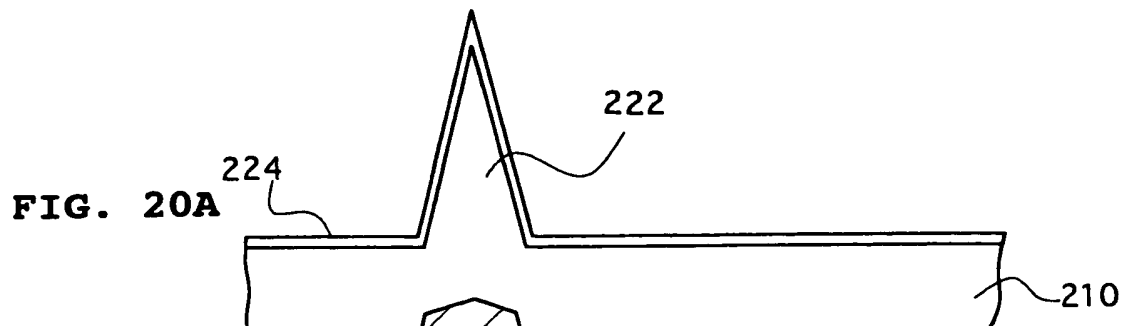


FIG. 20E

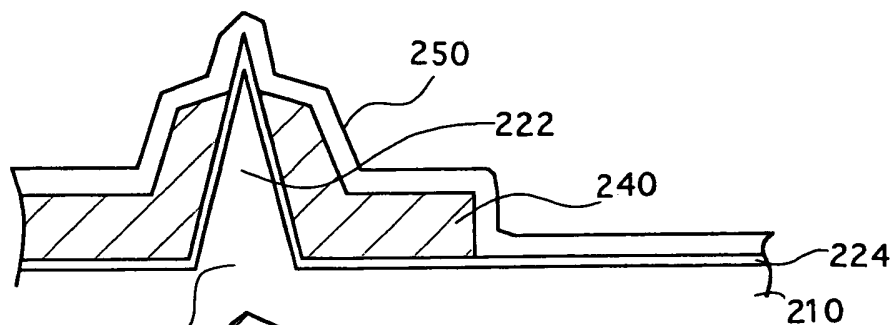


FIG. 20F

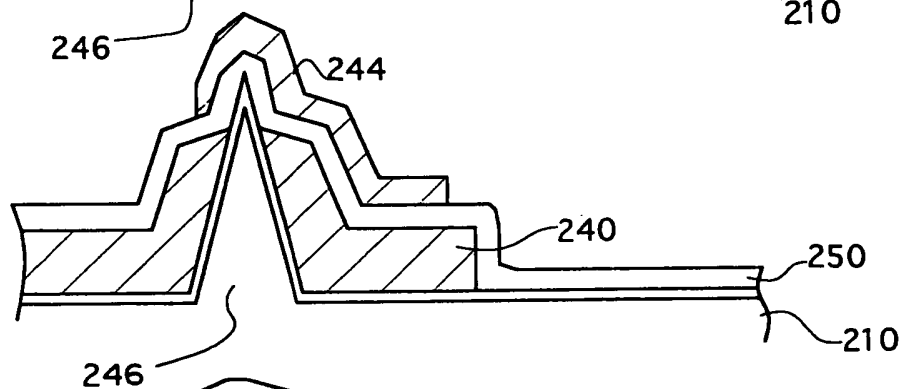


FIG. 20G

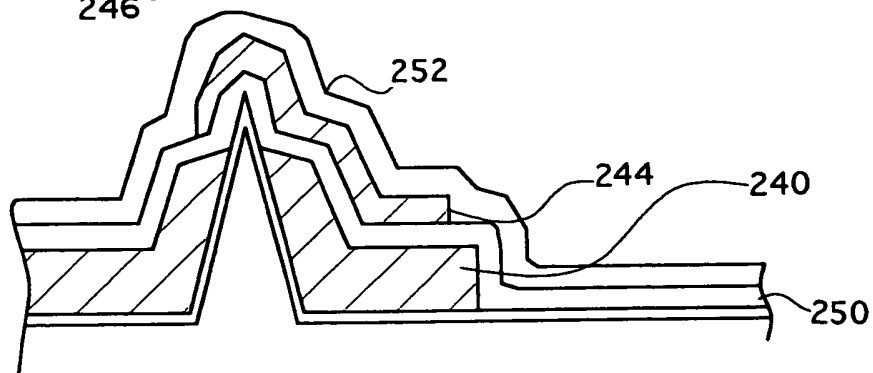
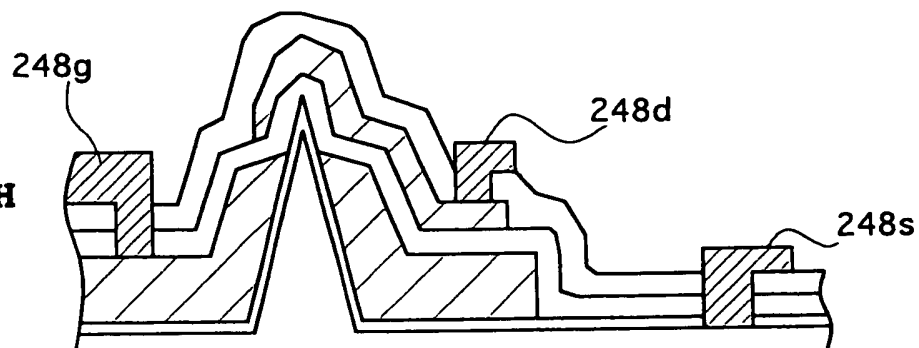


FIG. 20H



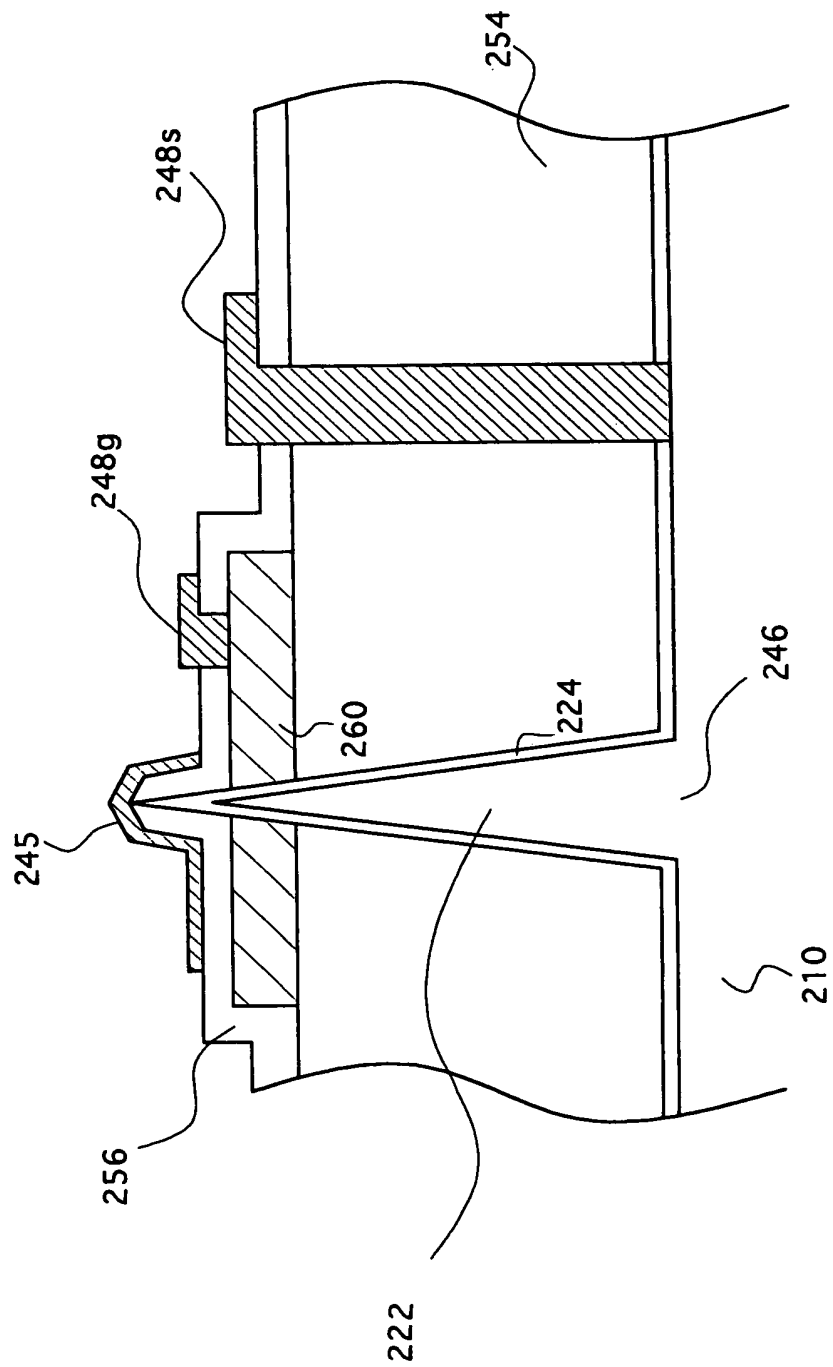


FIG. 21

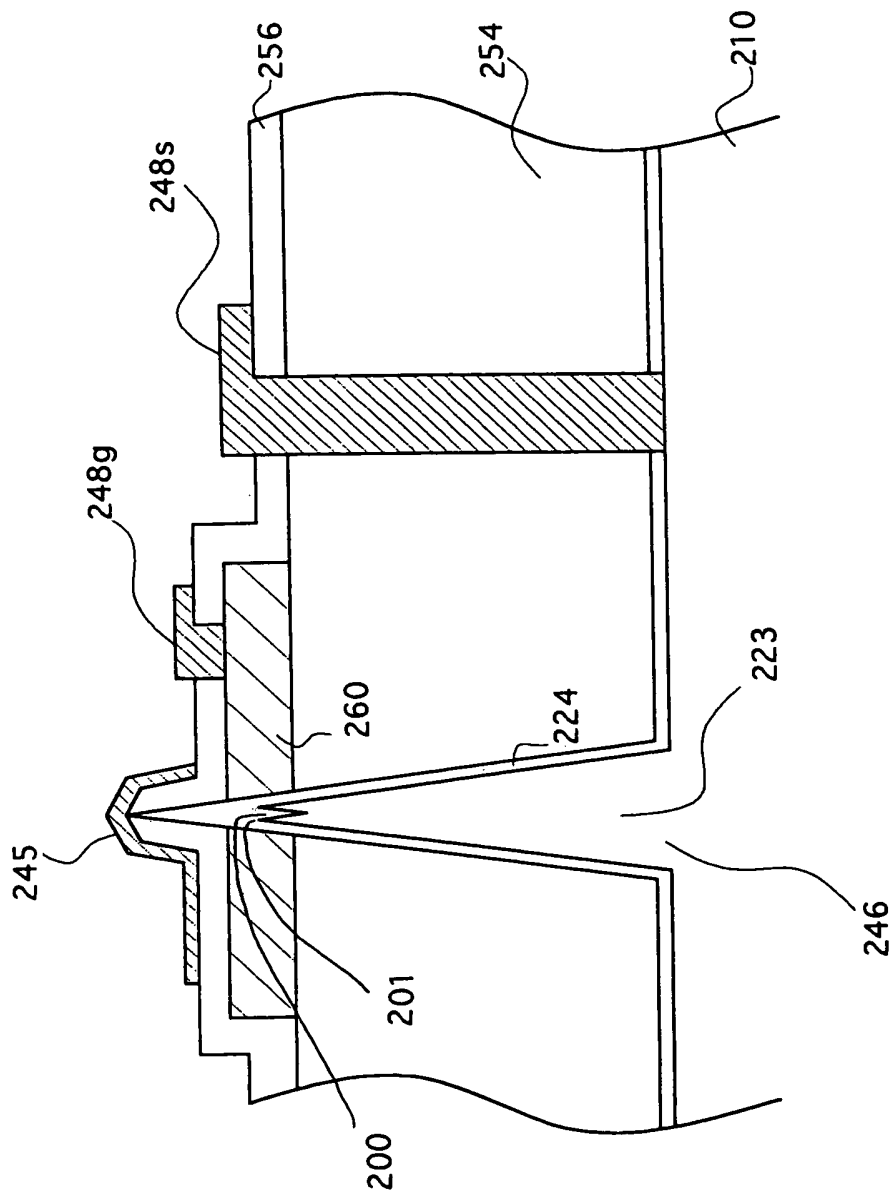
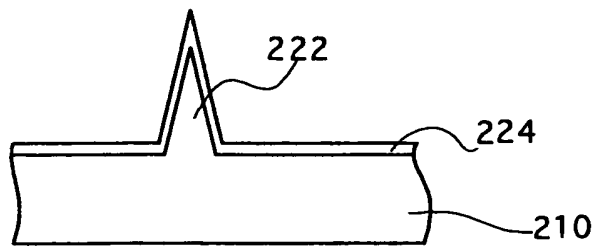
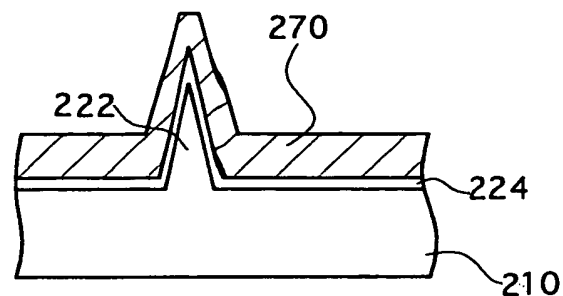
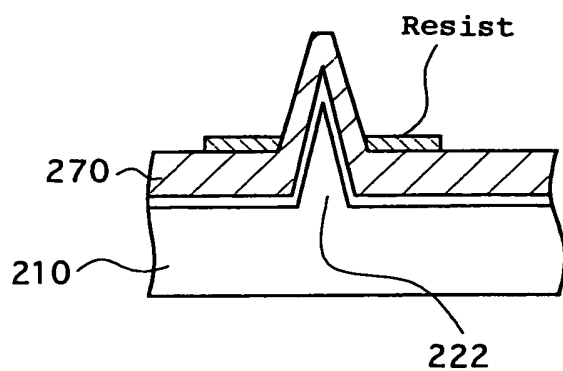
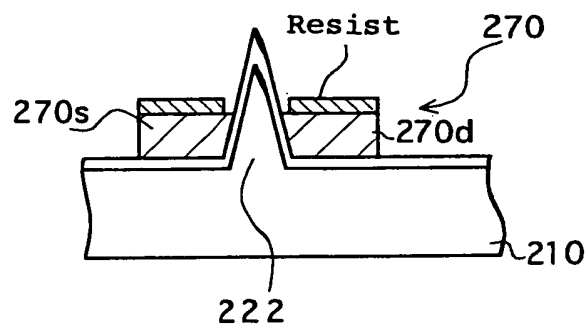
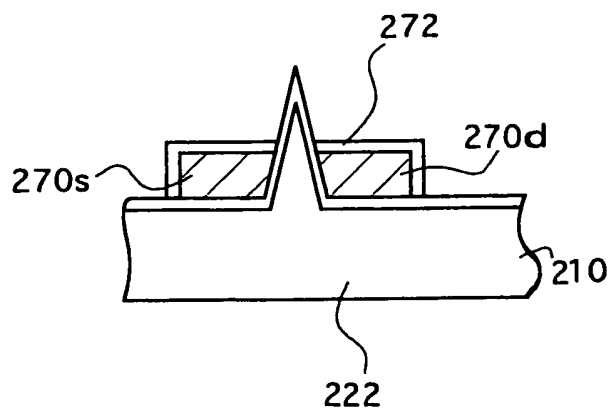
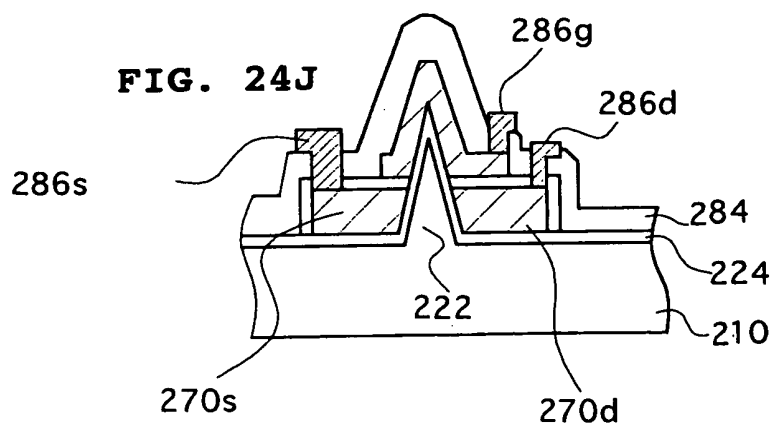
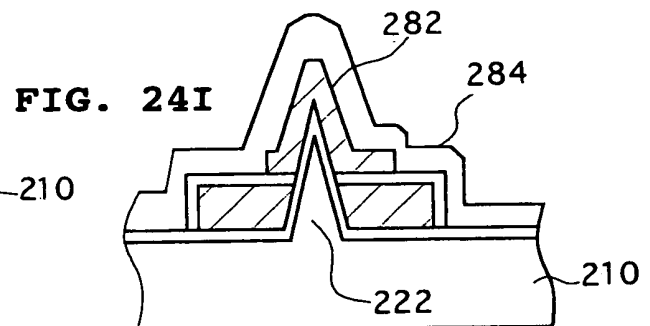
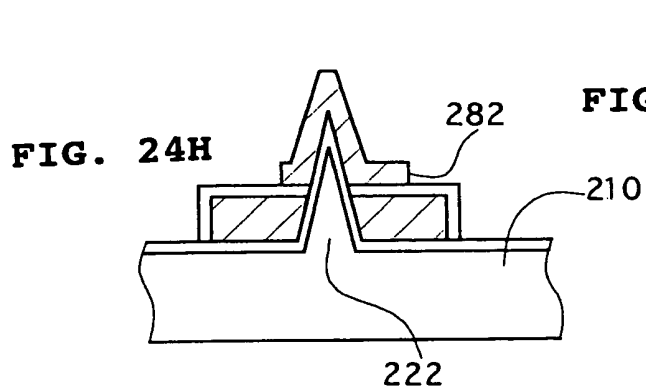
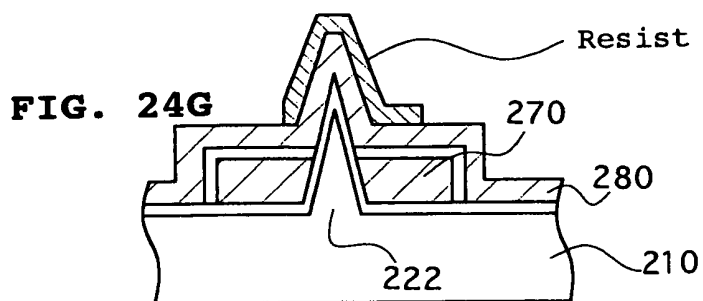
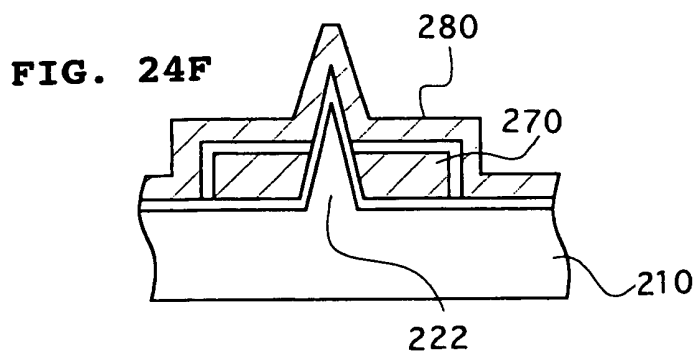
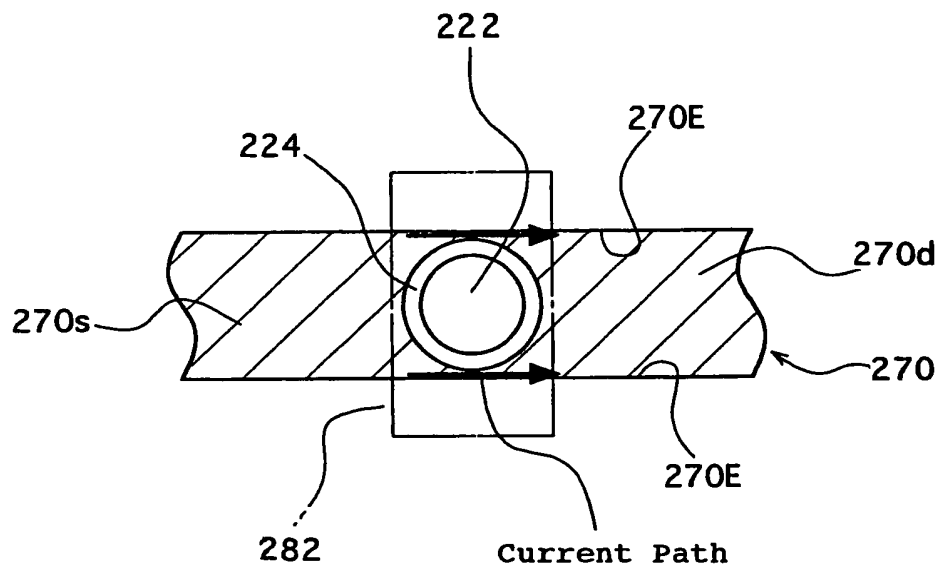
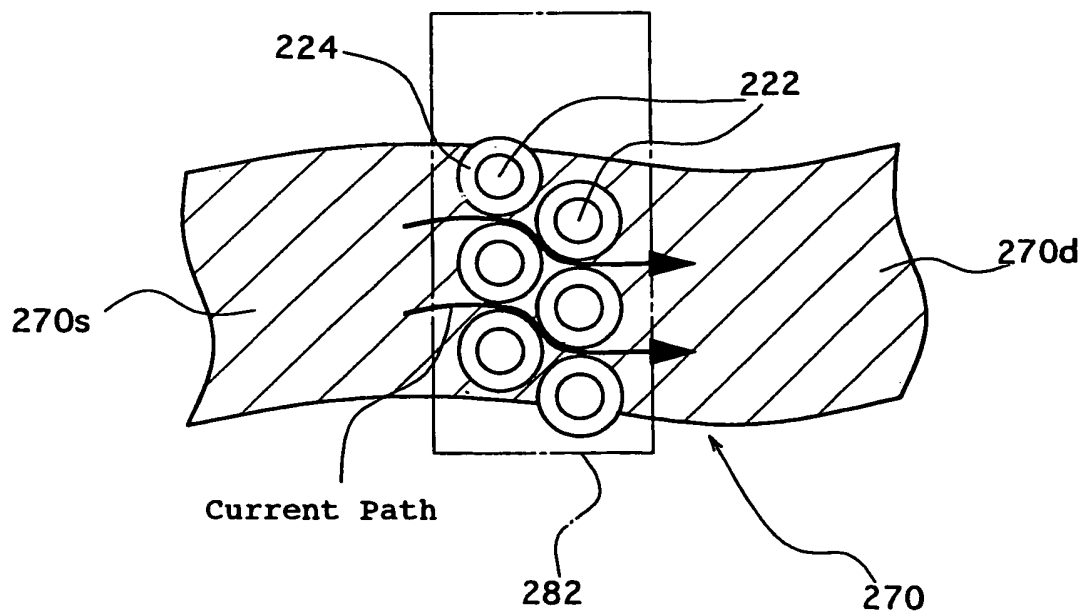


FIG. 22



**FIG. 24A****FIG. 24B****FIG. 24C****FIG. 24D****FIG. 24E**



**FIG. 25A****FIG. 25B**

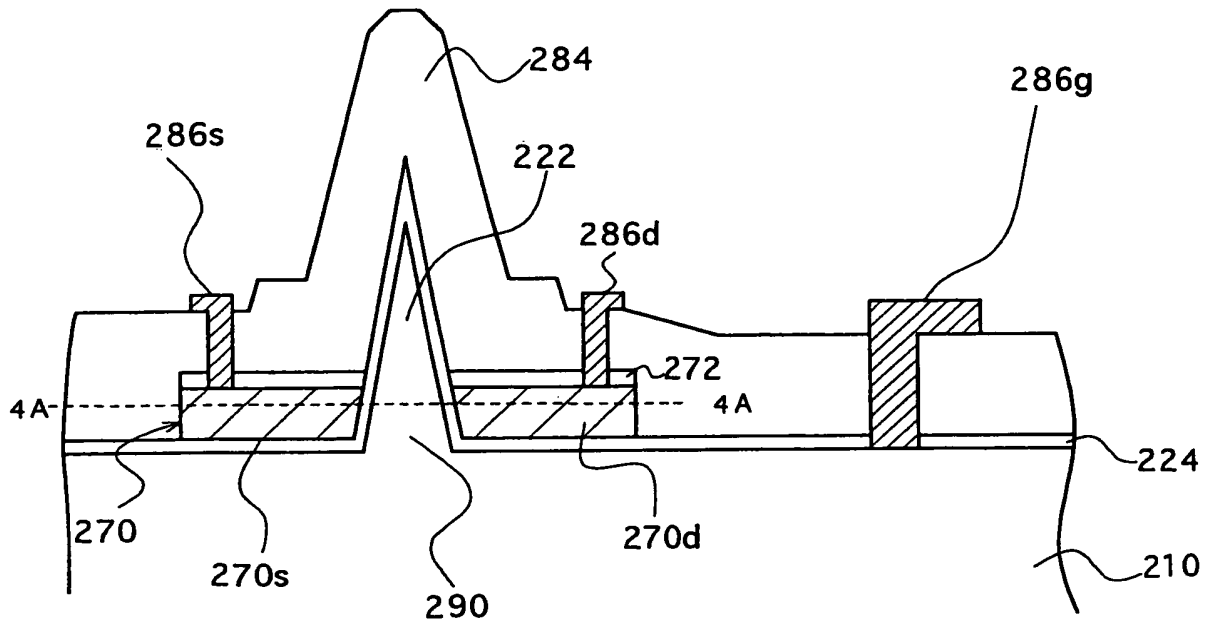


FIG. 26A

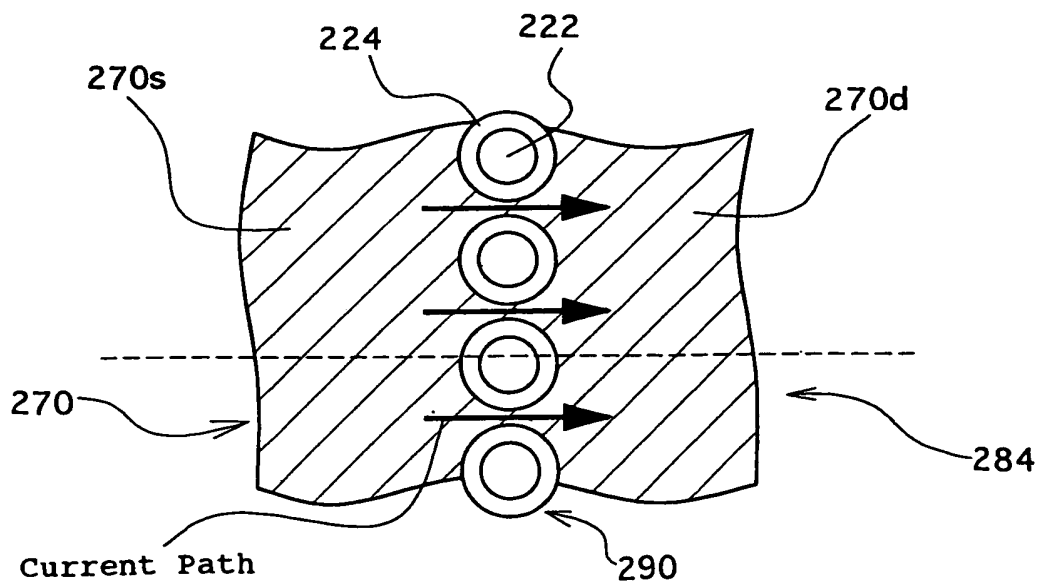
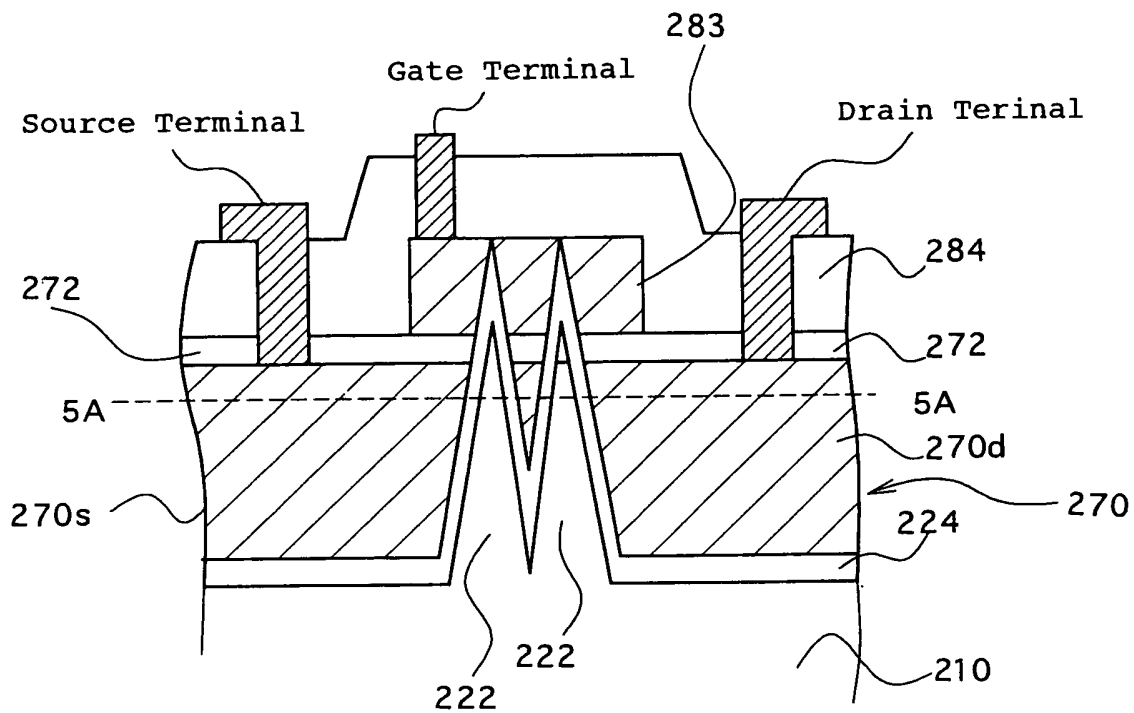
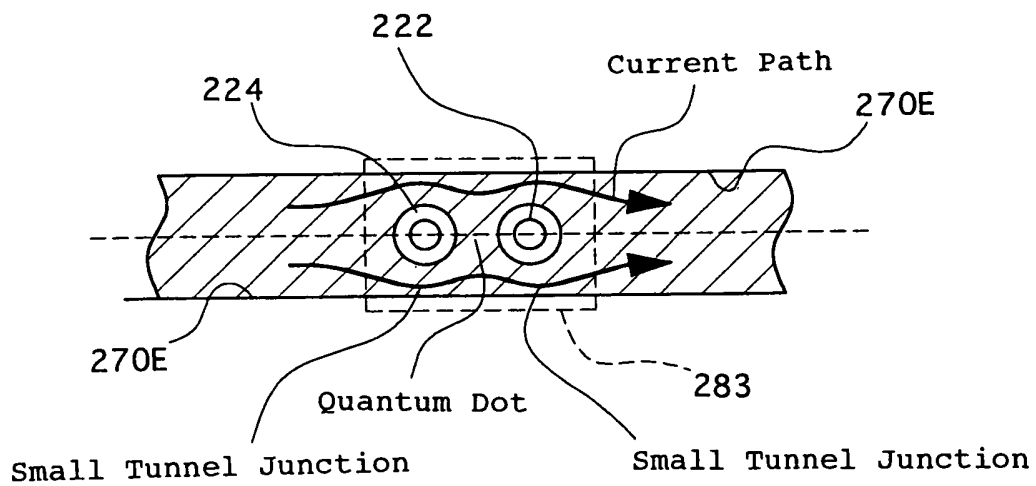


FIG. 26B

**FIG. 27A****FIG. 27B**

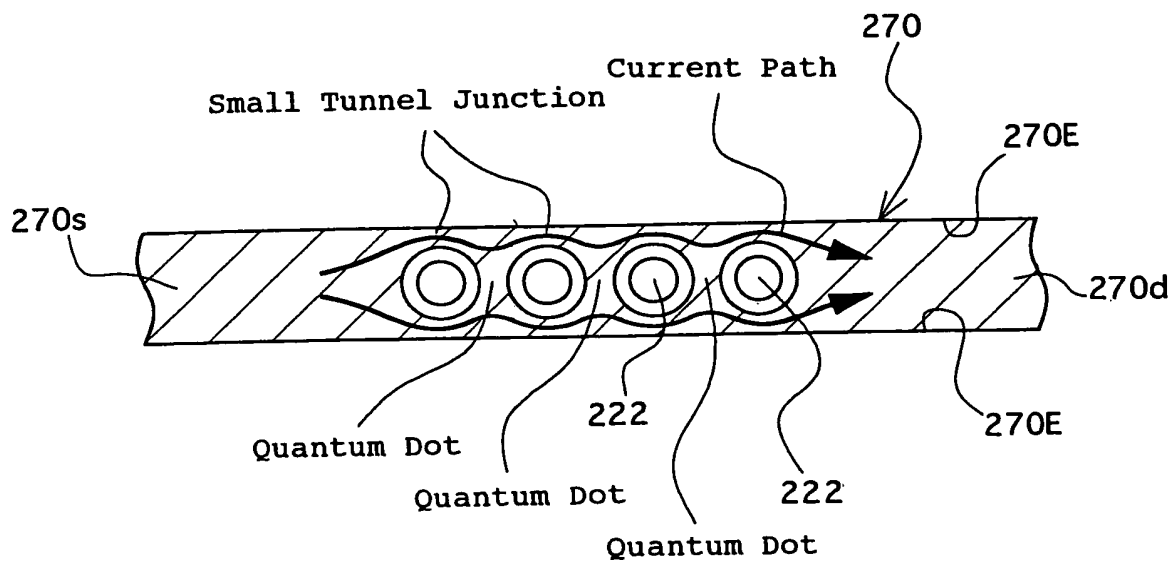
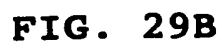
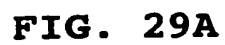
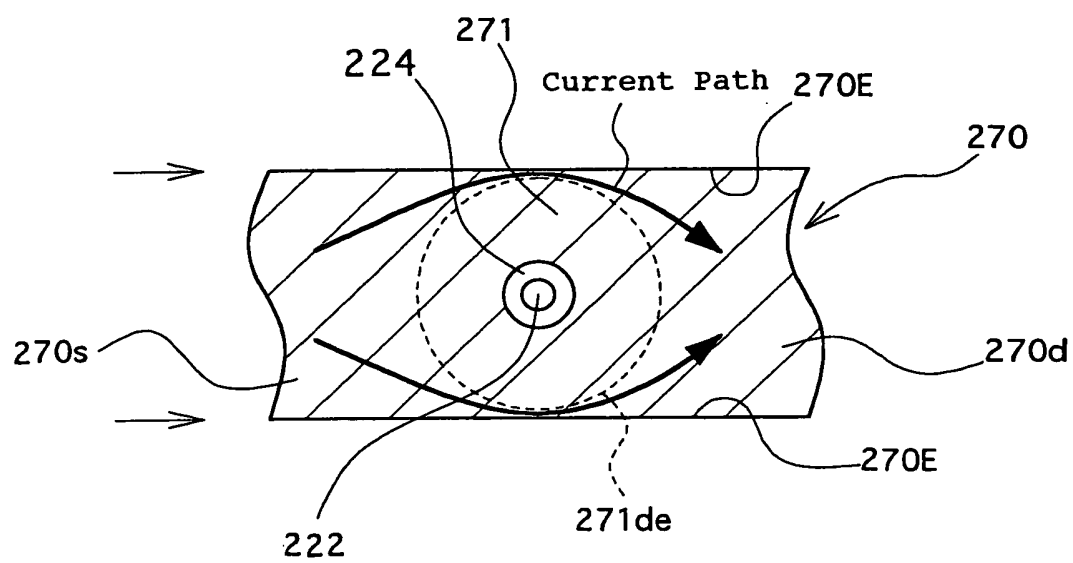


FIG. 28



**FIG. 30**

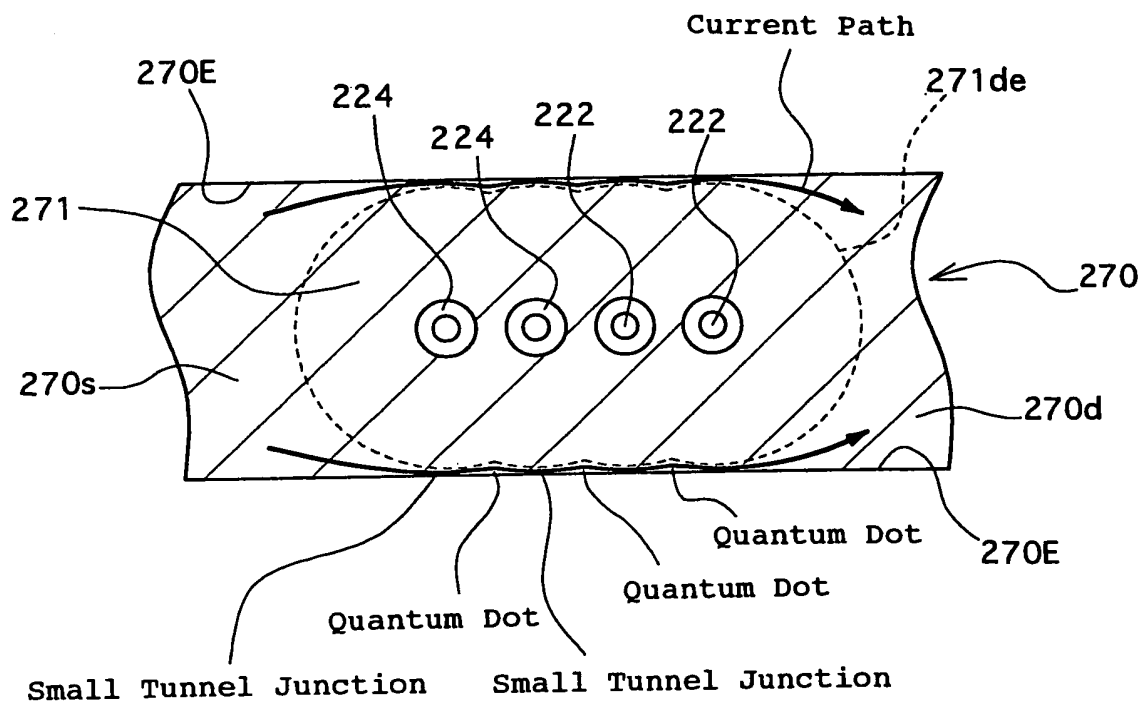


FIG. 31

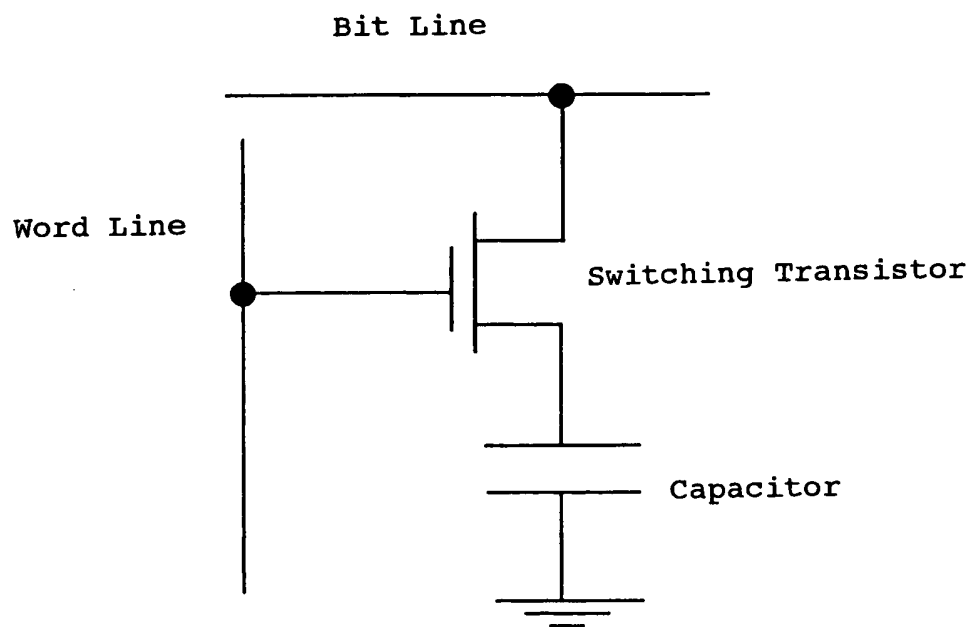


FIG. 32 PRIOR ART

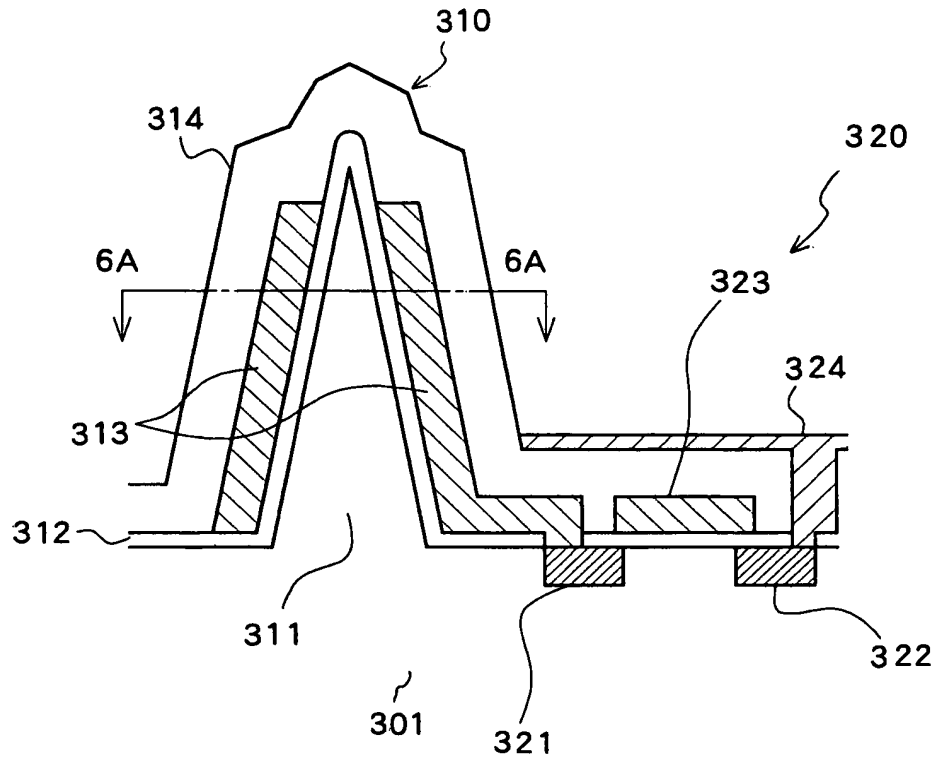


FIG. 33A

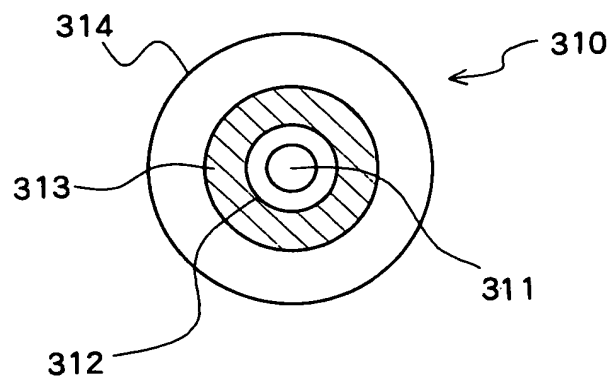


FIG. 33B

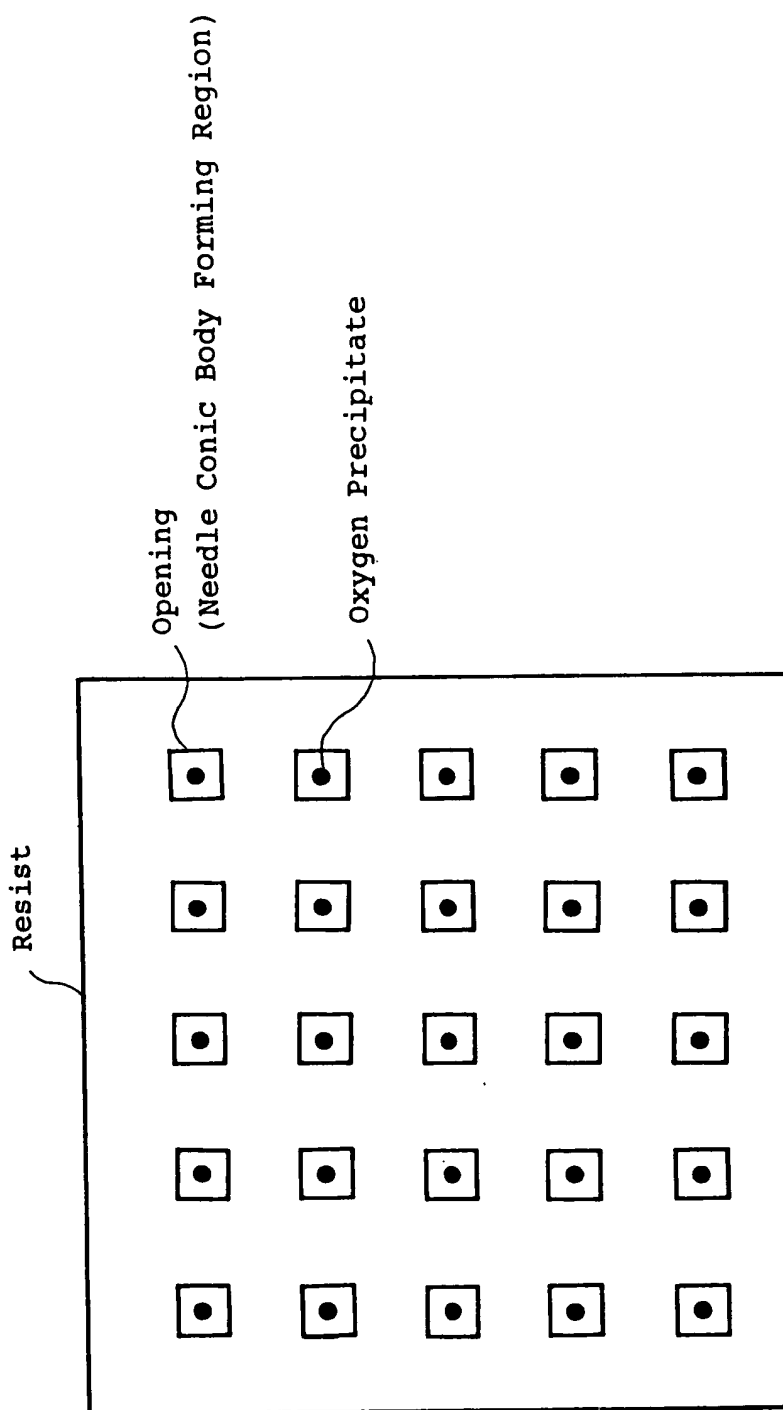
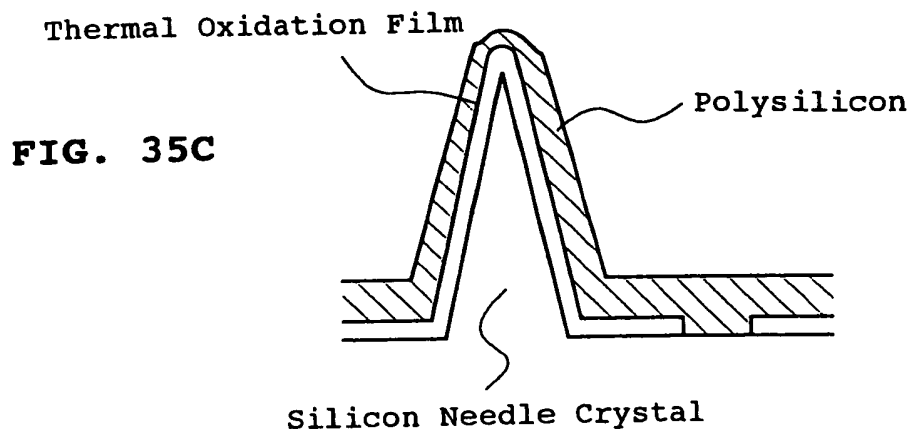
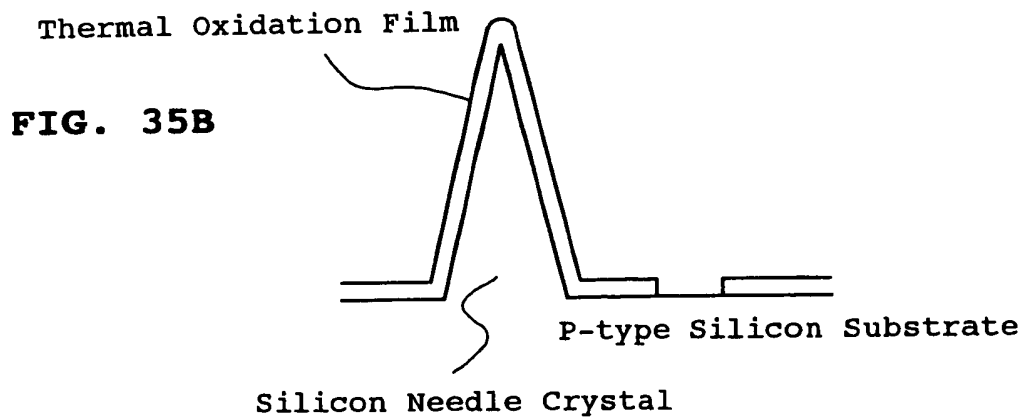
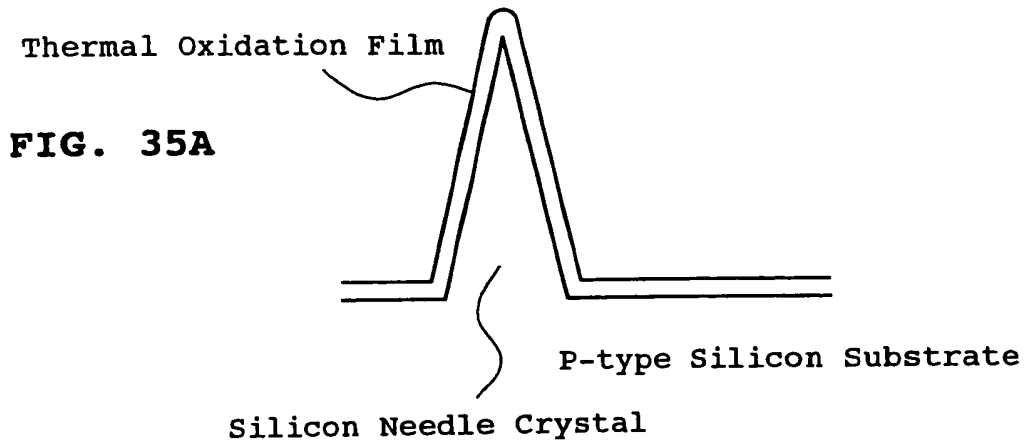
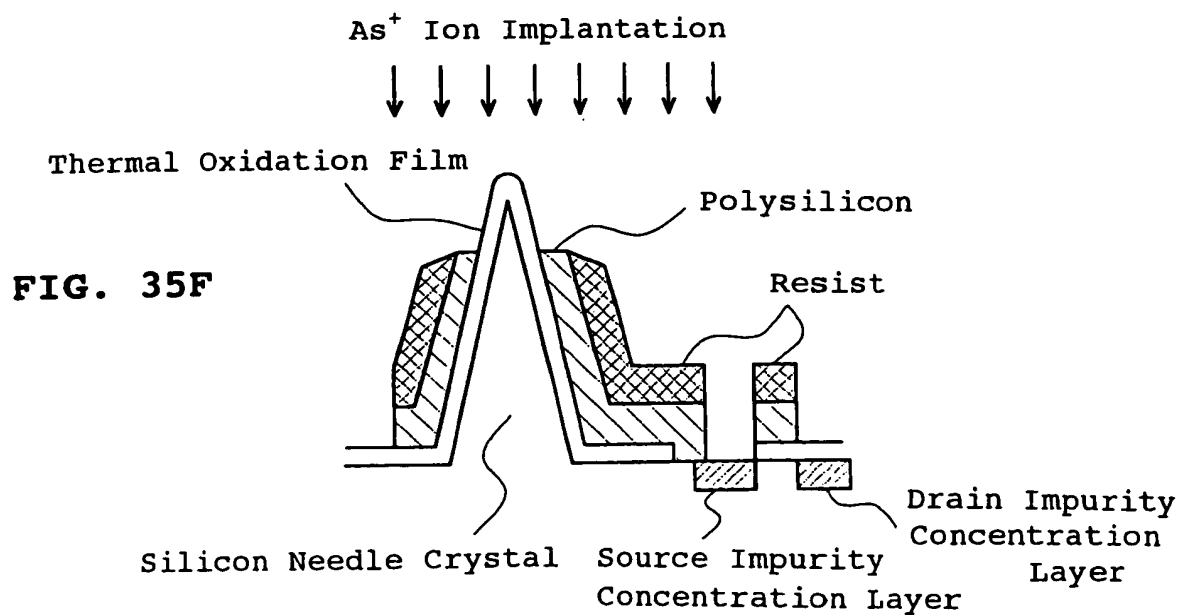
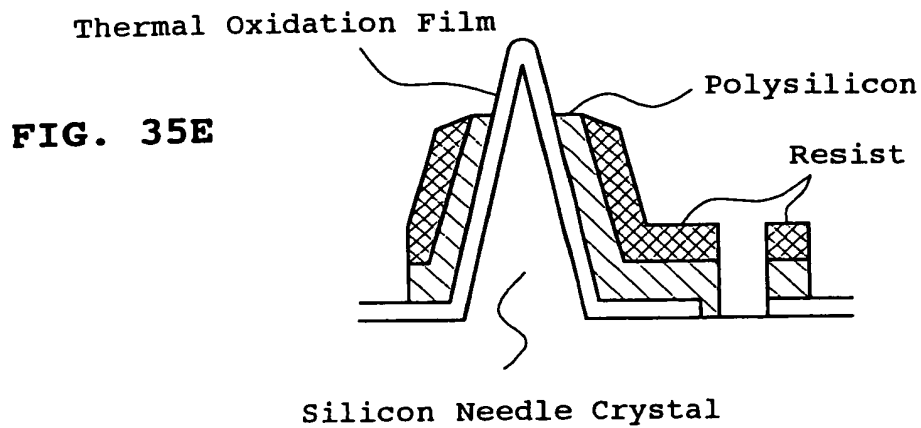
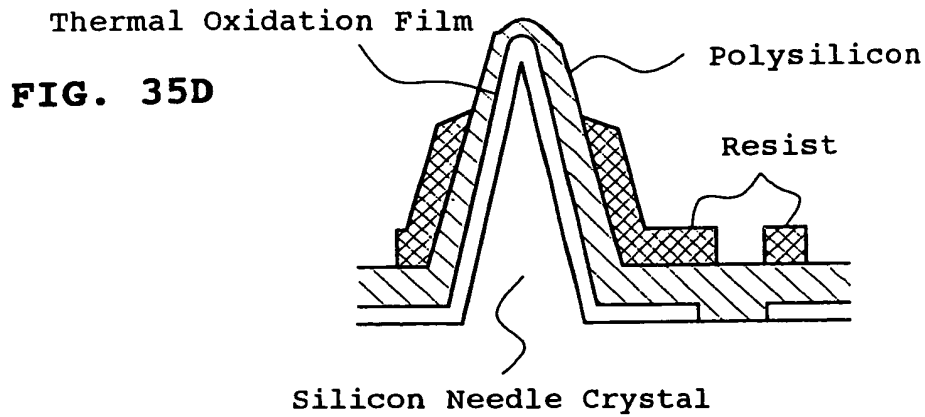
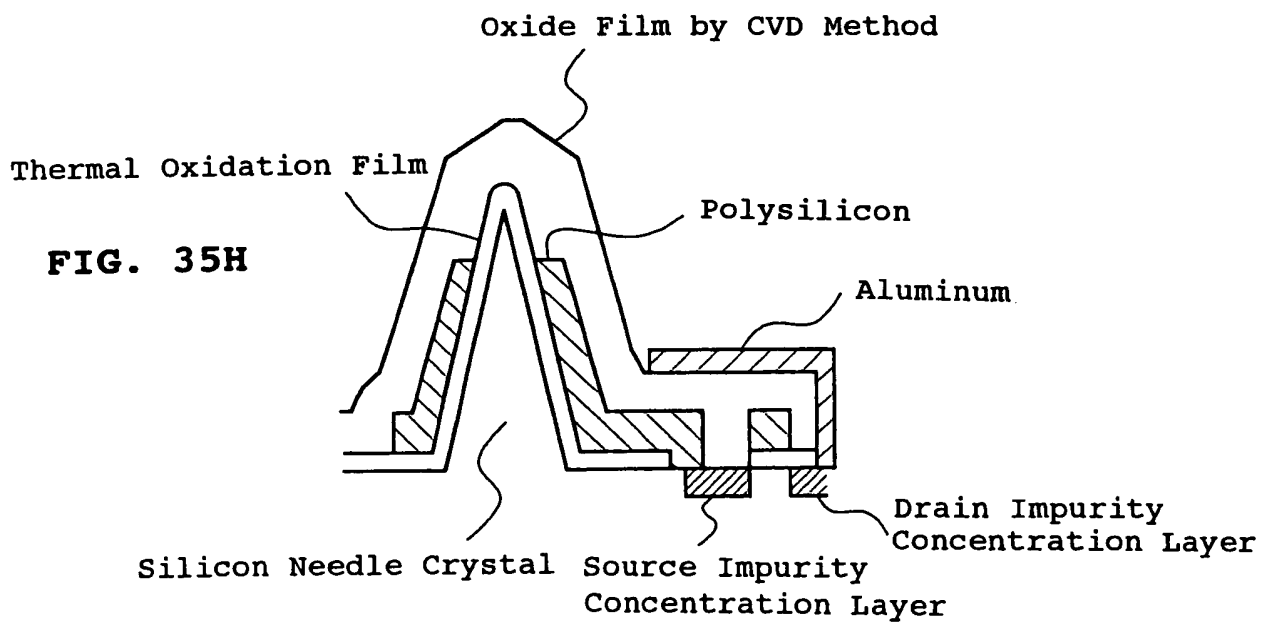
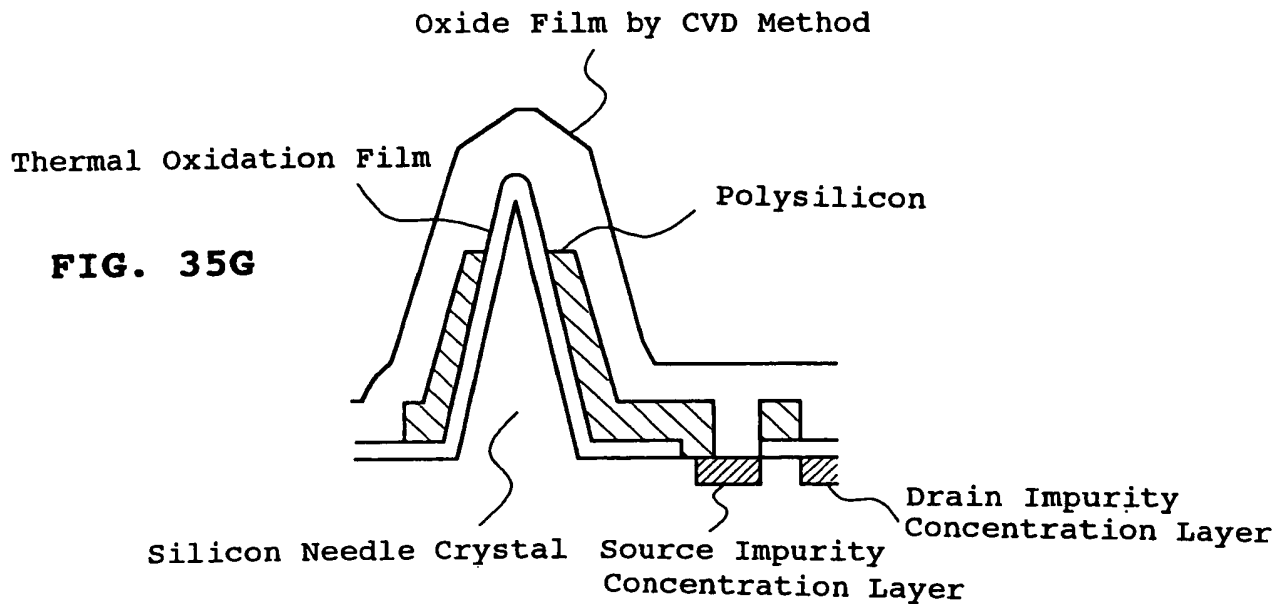


FIG. 34







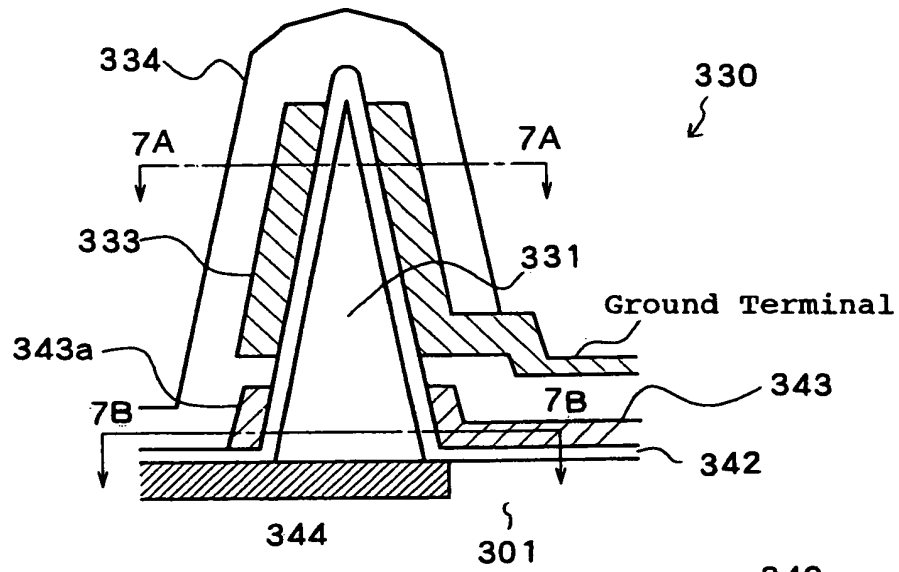


FIG. 36A

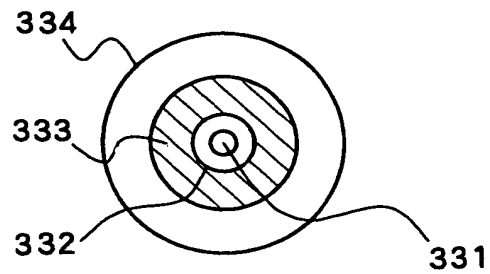


FIG. 36B

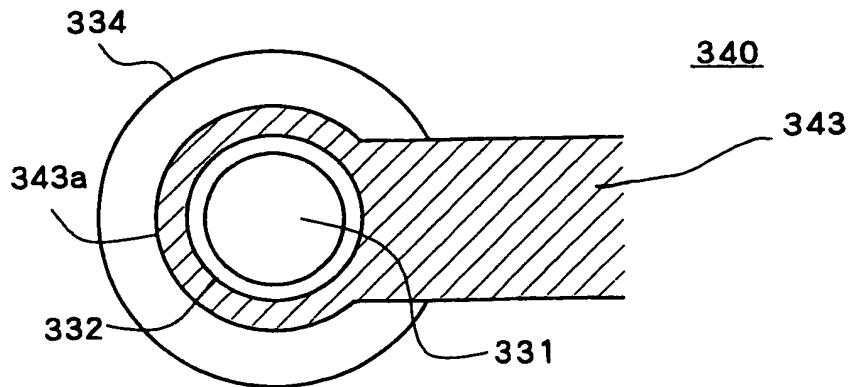
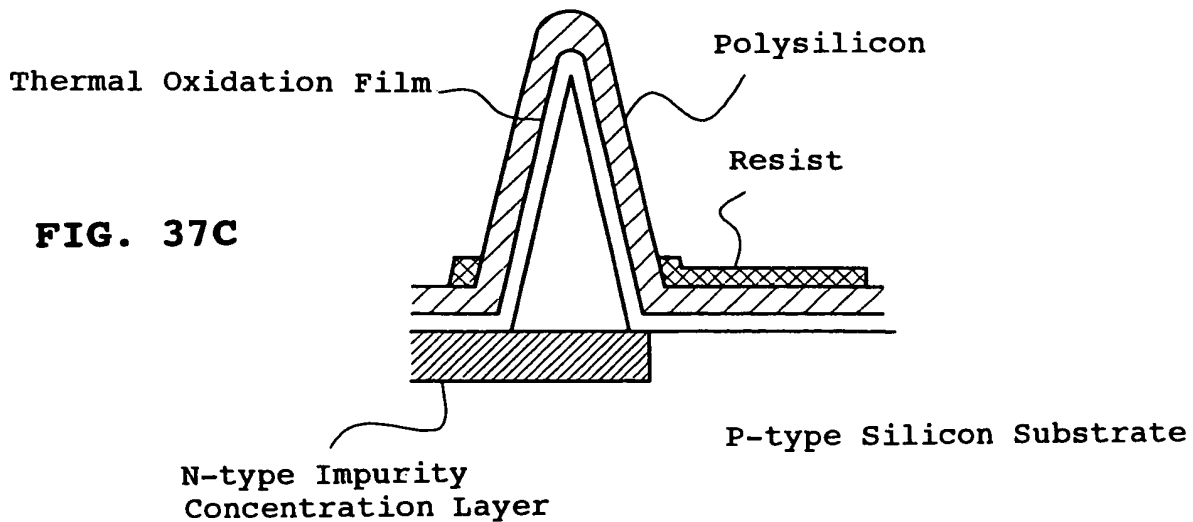
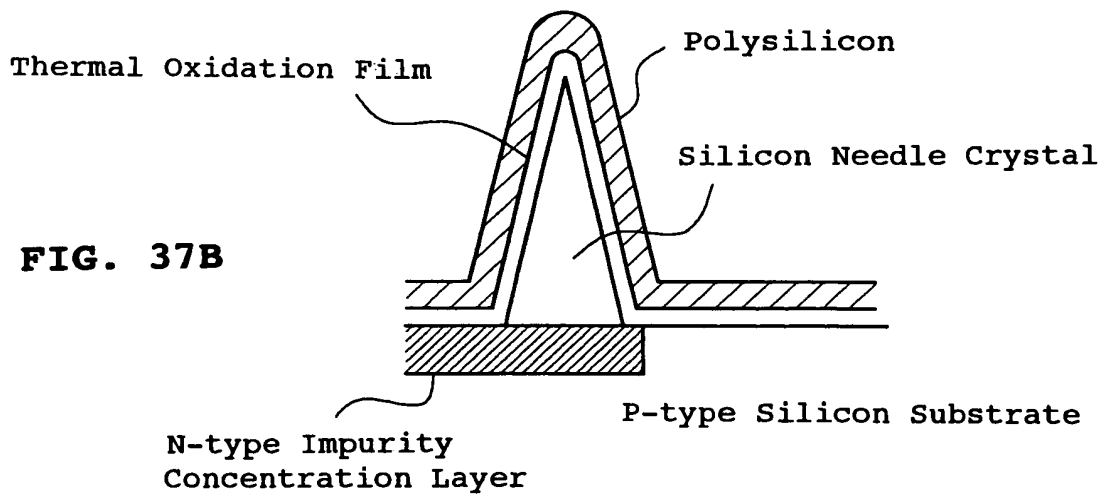
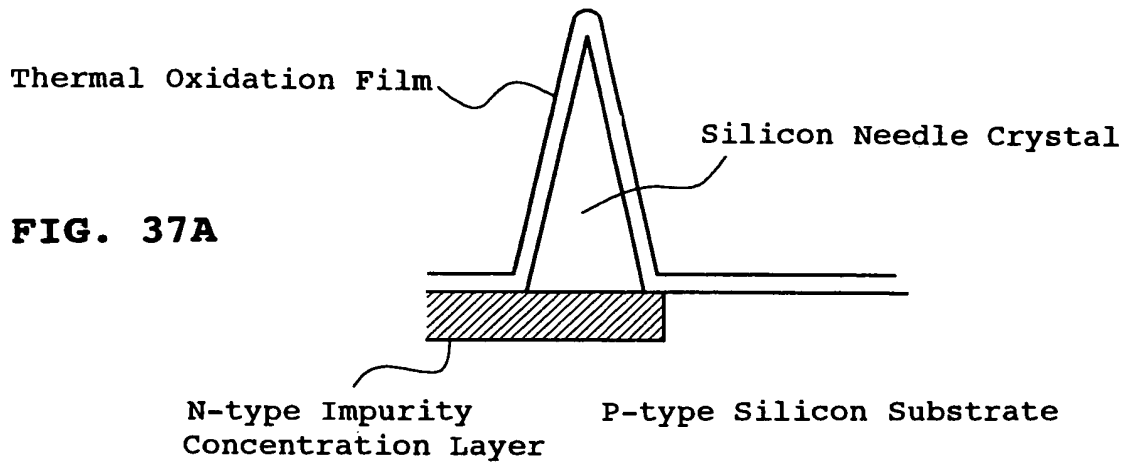
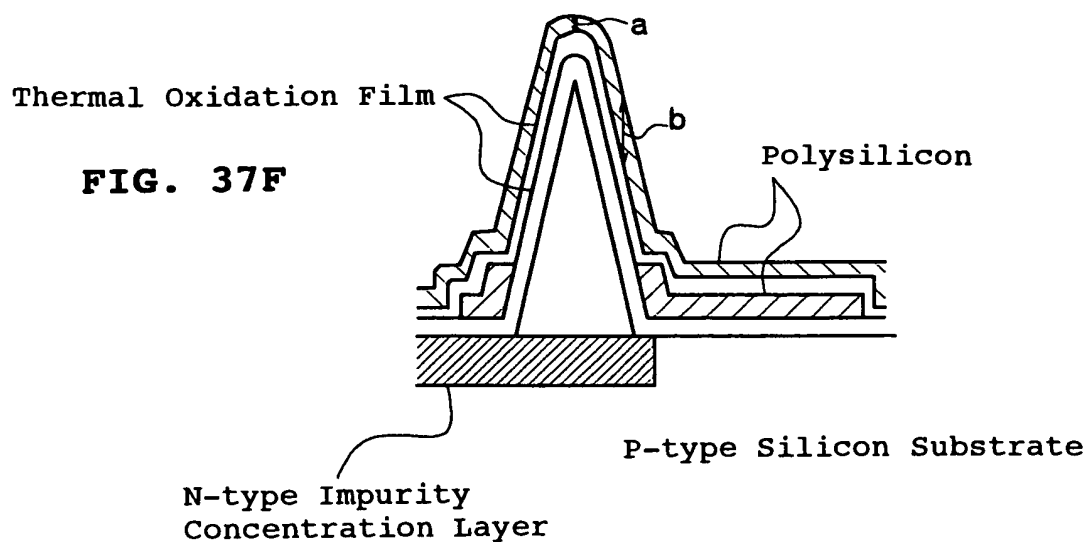
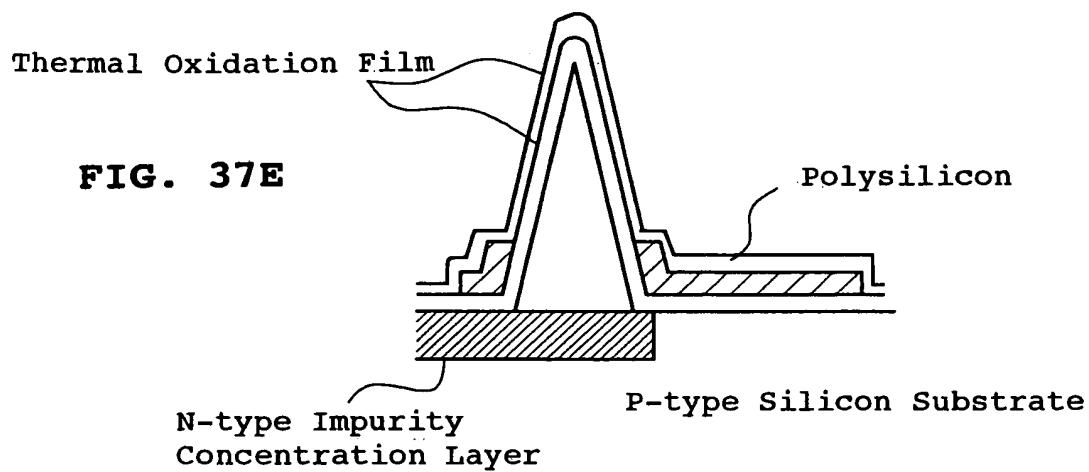
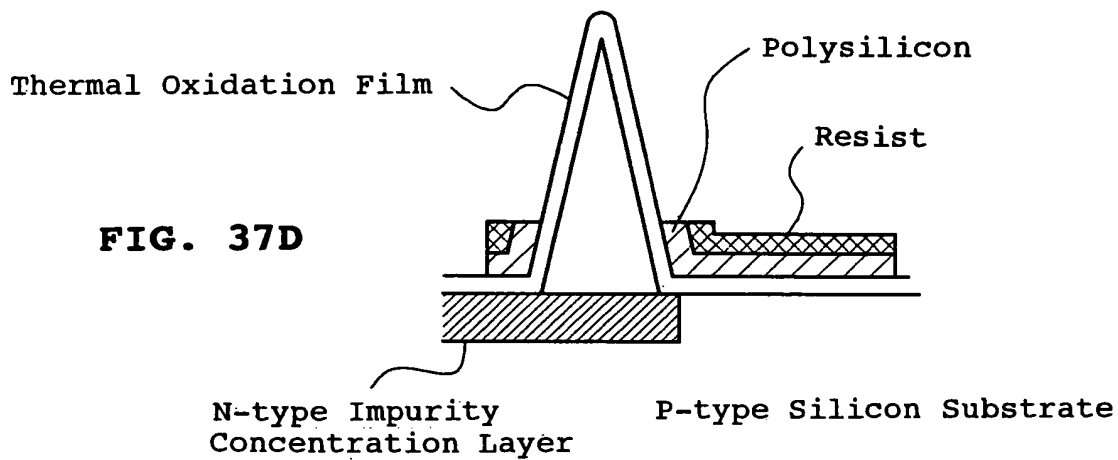
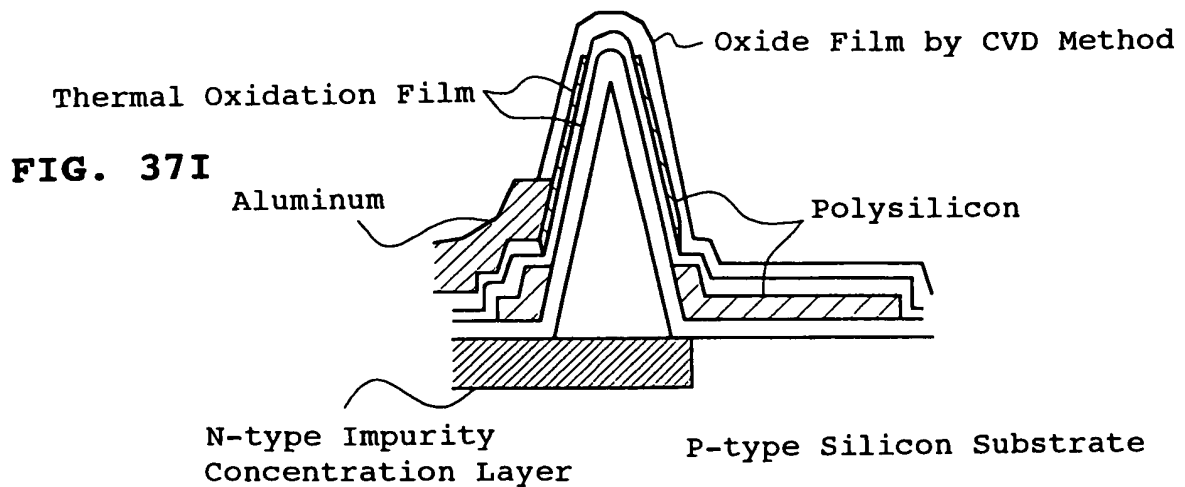
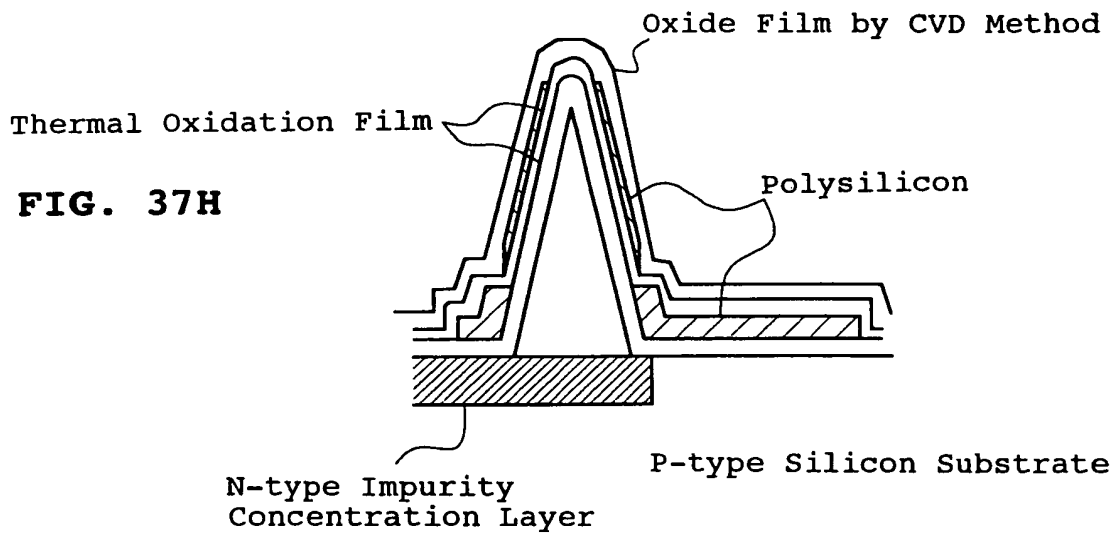
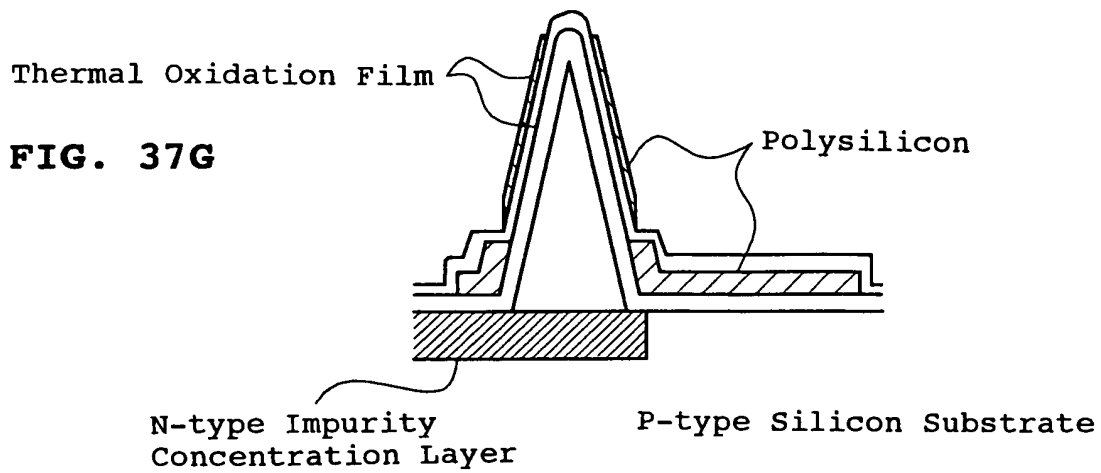


FIG. 36C







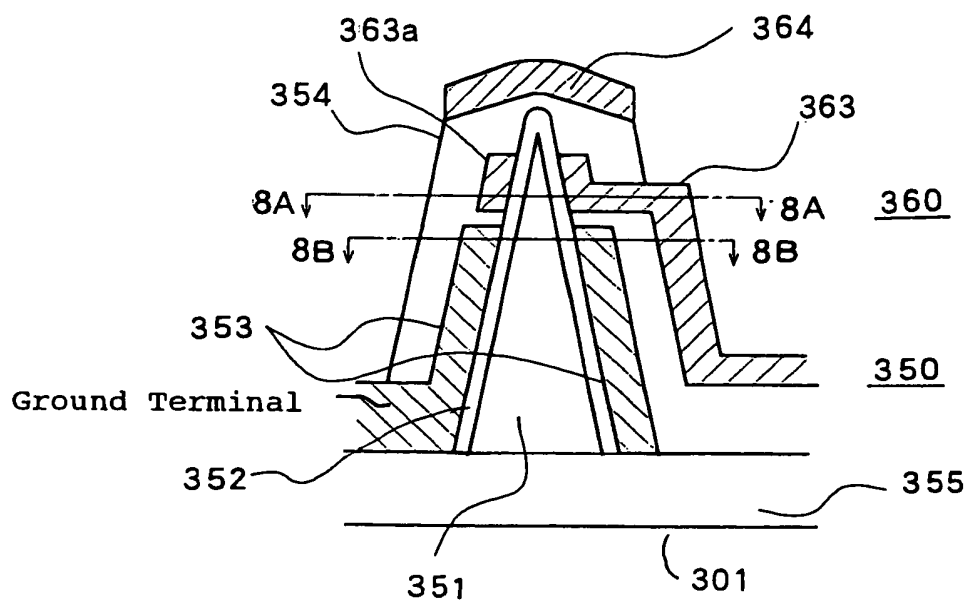


FIG. 38A

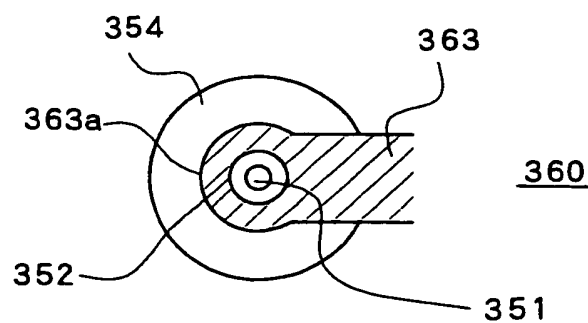


FIG. 38B

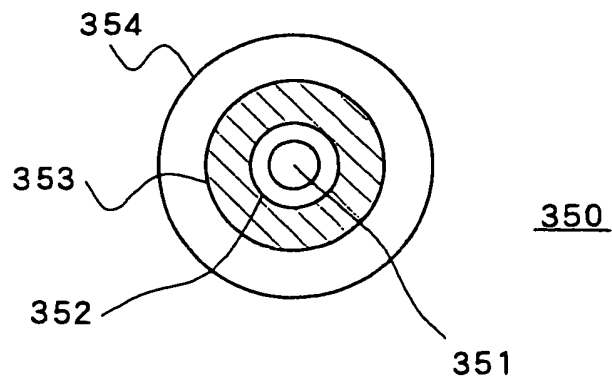
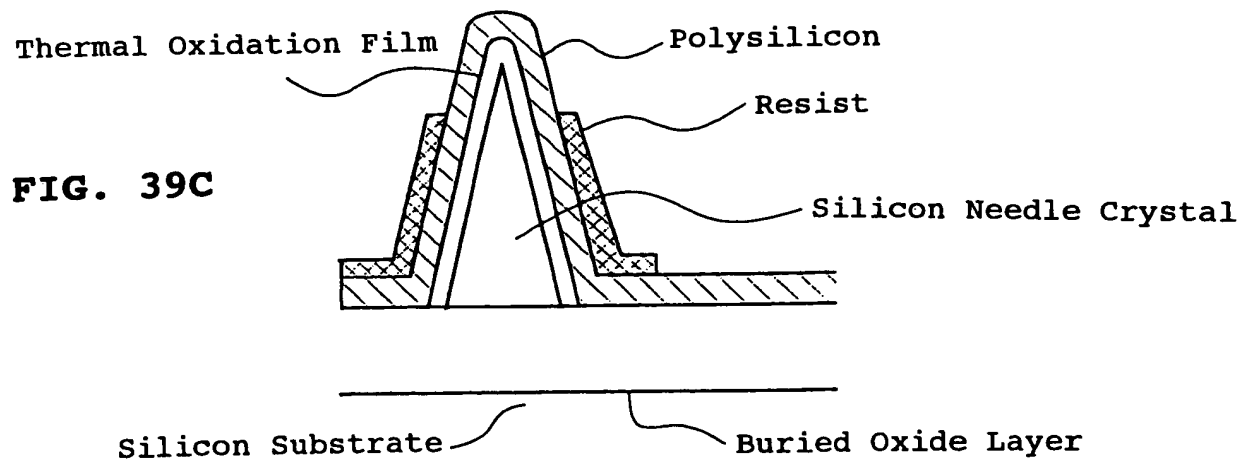
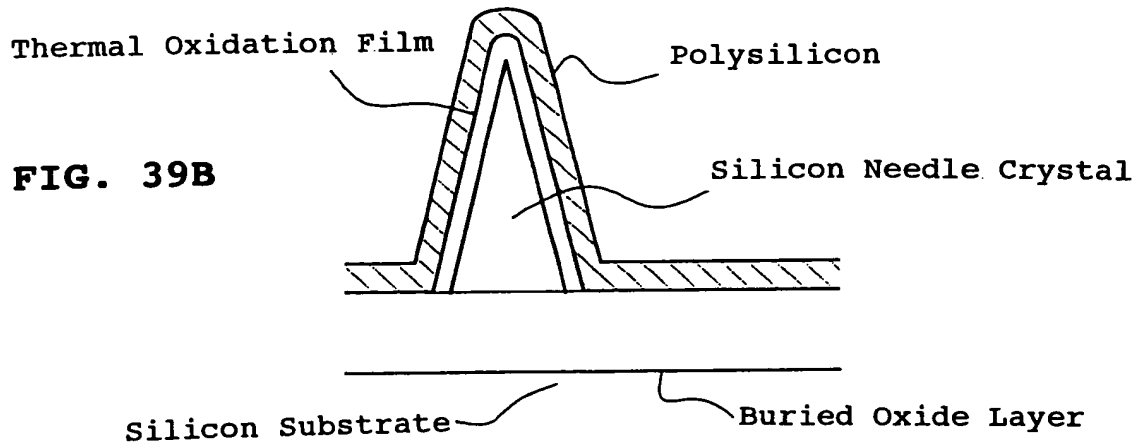
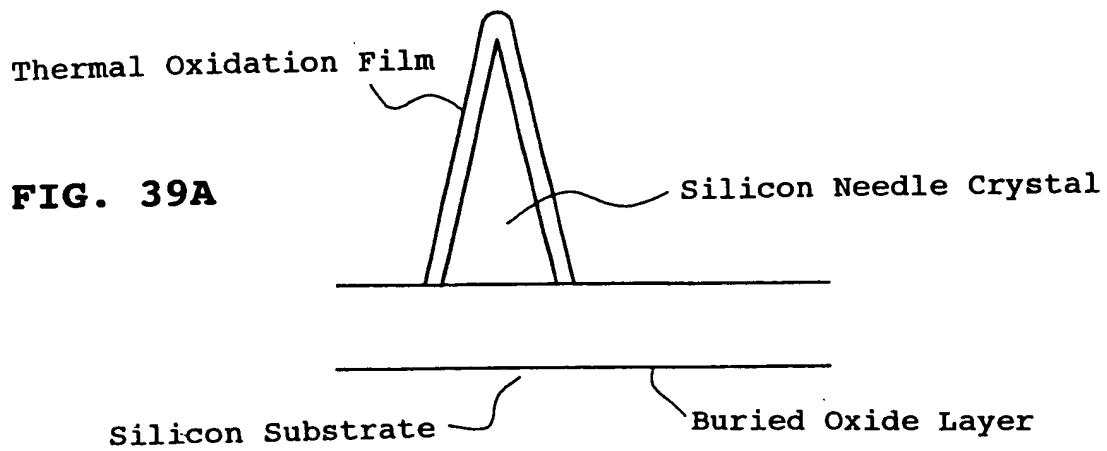
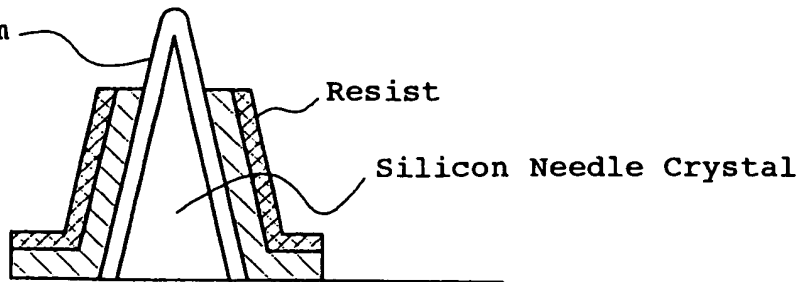


FIG. 38C



Thermal Oxidation Film

FIG. 39D

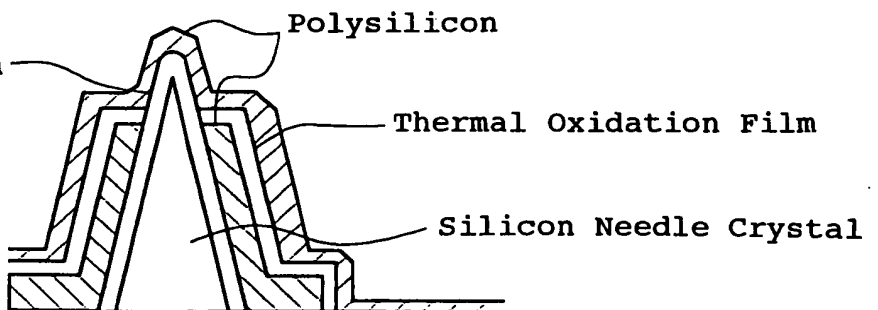


Silicon Substrate

Buried Oxide Layer

Thermal Oxidation Film

FIG. 39E



Silicon Substrate

Buried Oxide Layer

